SAKIPOV, Z.B.; TEMIRBAYEV, D.Zh.

Relation of the coefficients of turbulent transfer of momentum and heat in a free turbulent jet of liquid metal. Vest.An Kazakh. SSR 19 no.2: 79-80 F '63. (MIRA 16:5)

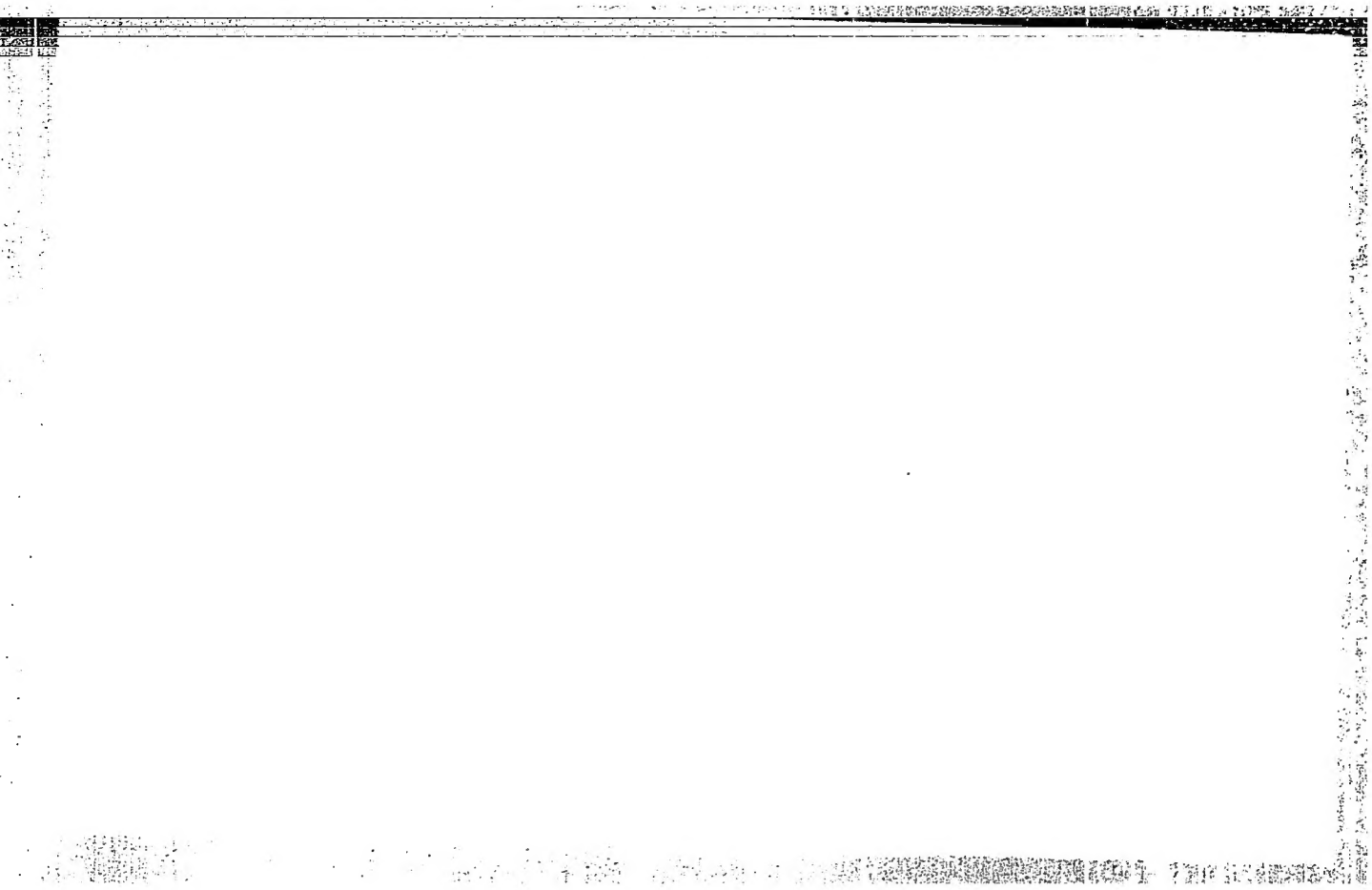
(Liquid metal)

PALATNIK, I. B.; TEMIRBAYEV, D. Zh.

"An investigation of free turbulent jets flowing from a rectangular opening."

report submitted for 2nd All-Union Conf on Heat & Mass Transfer, Minsk, 4-12 May 1964.

Power Inst, AS KazSSR.



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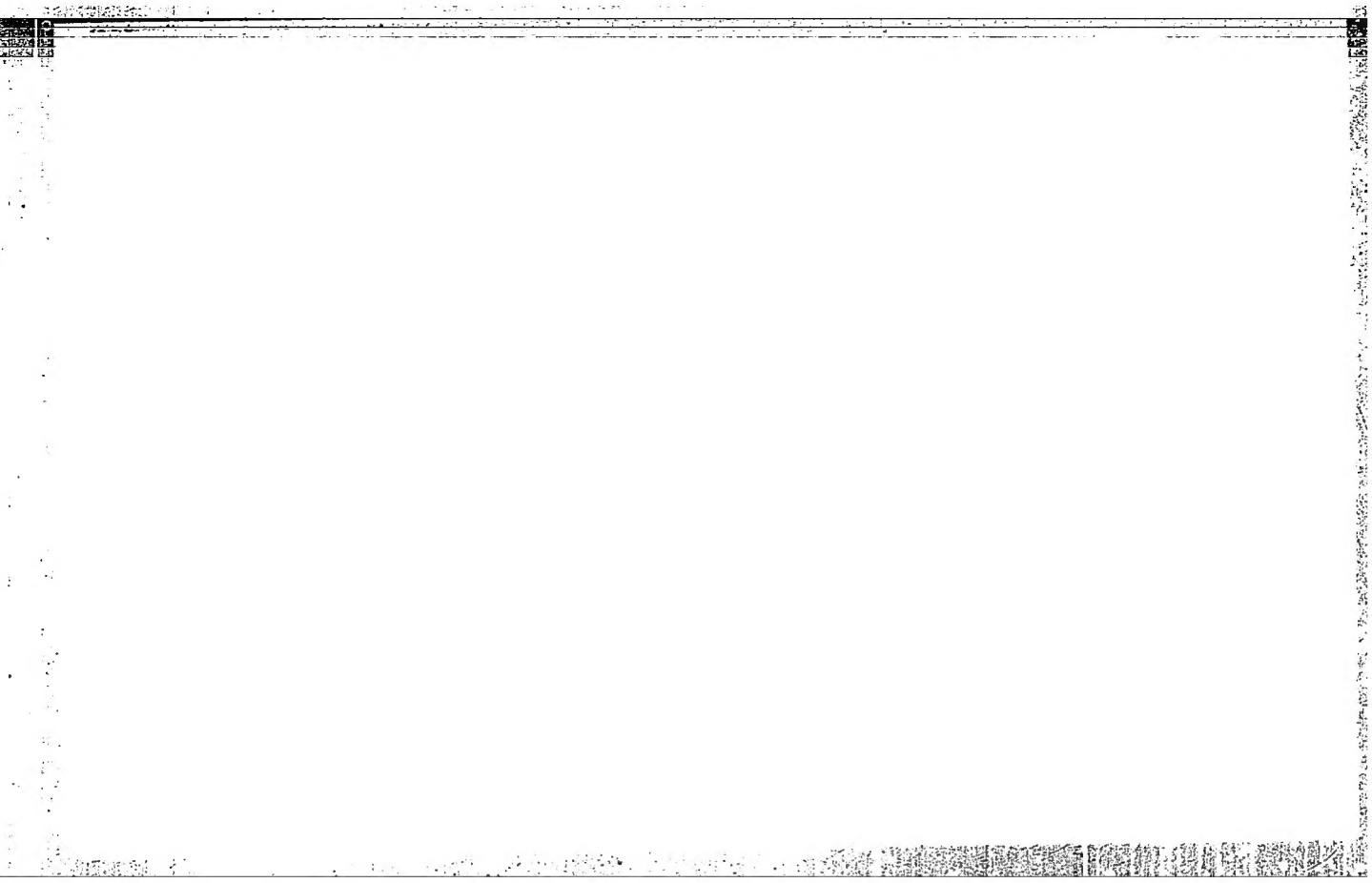

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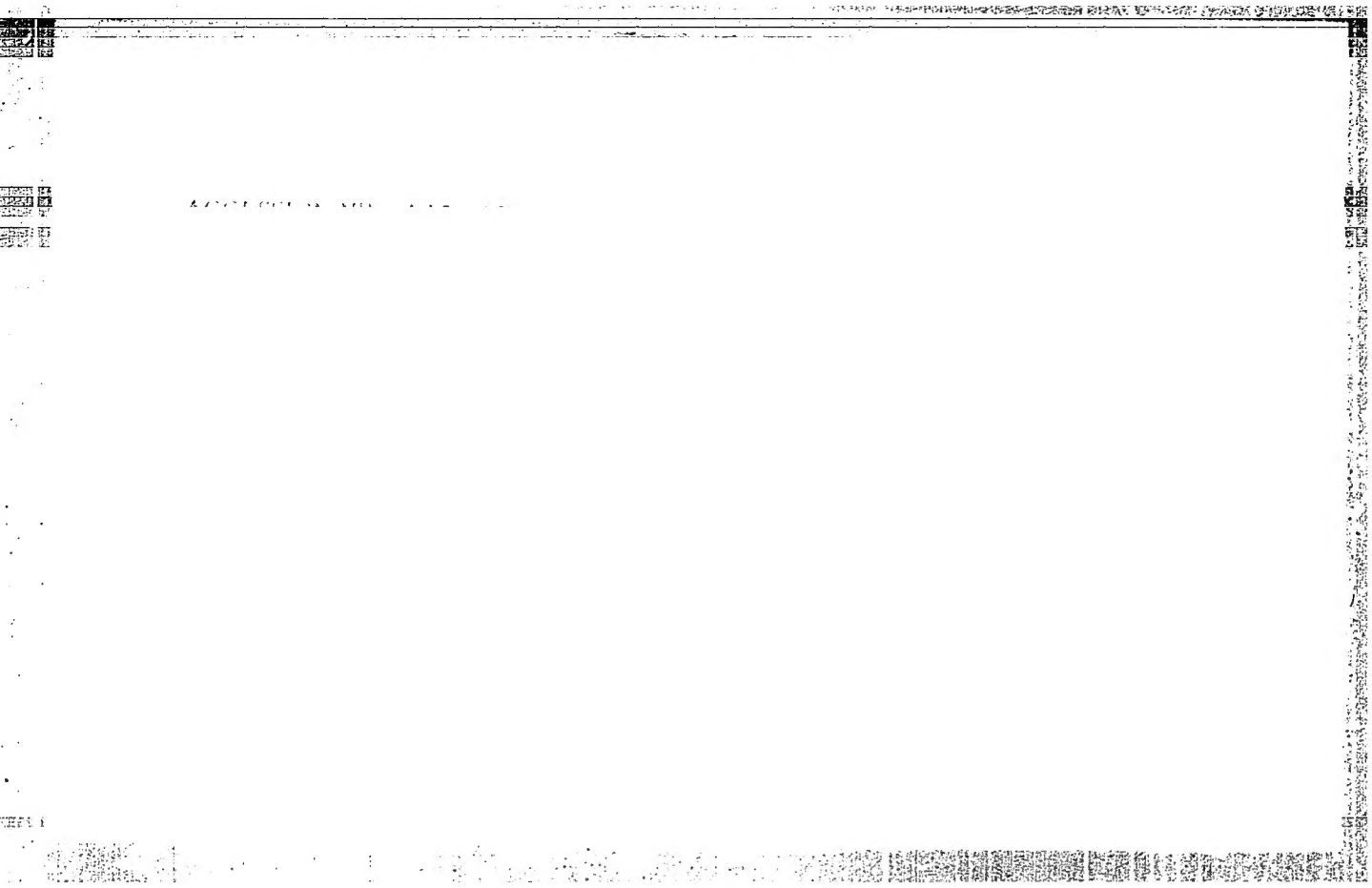

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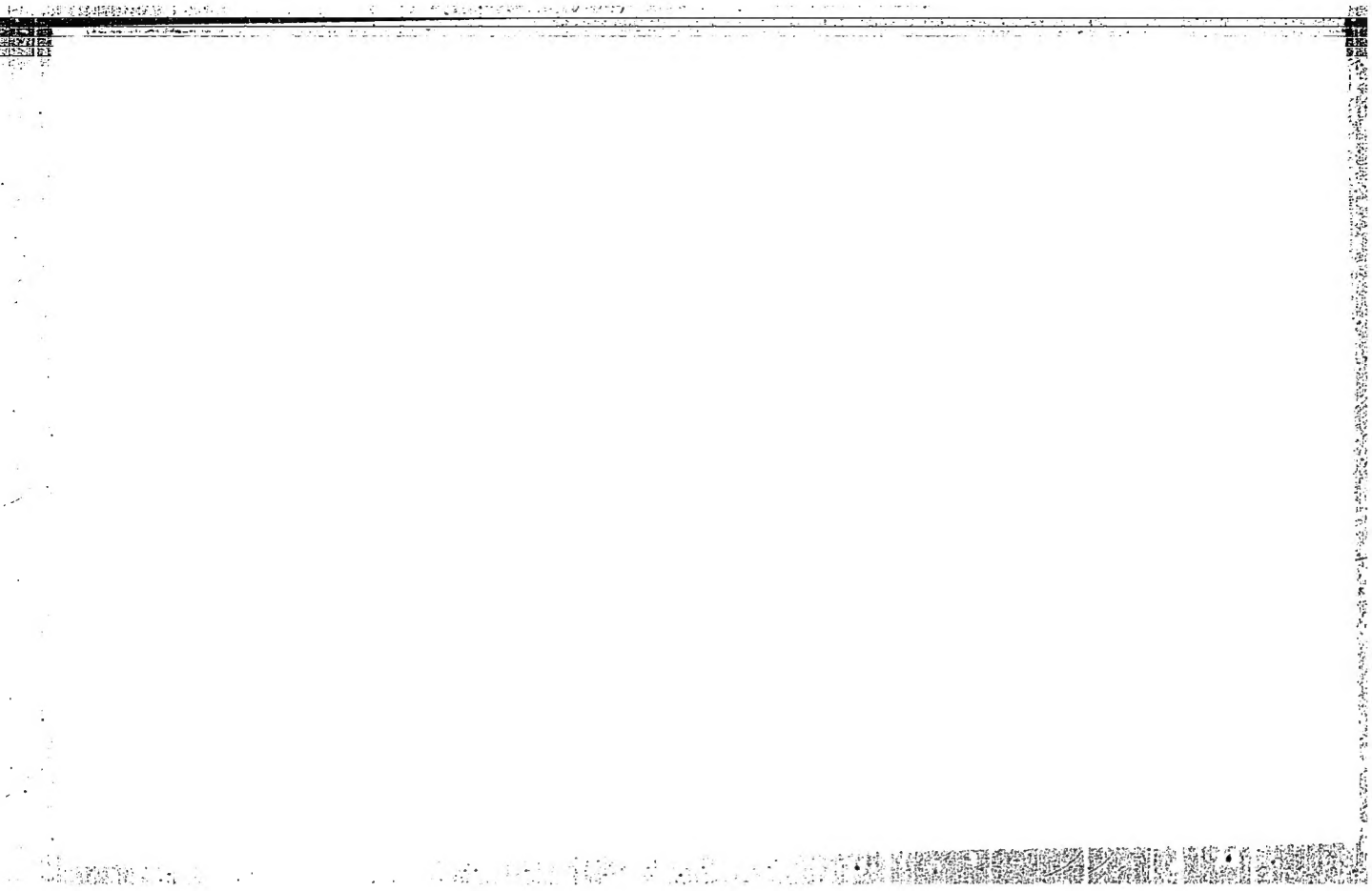

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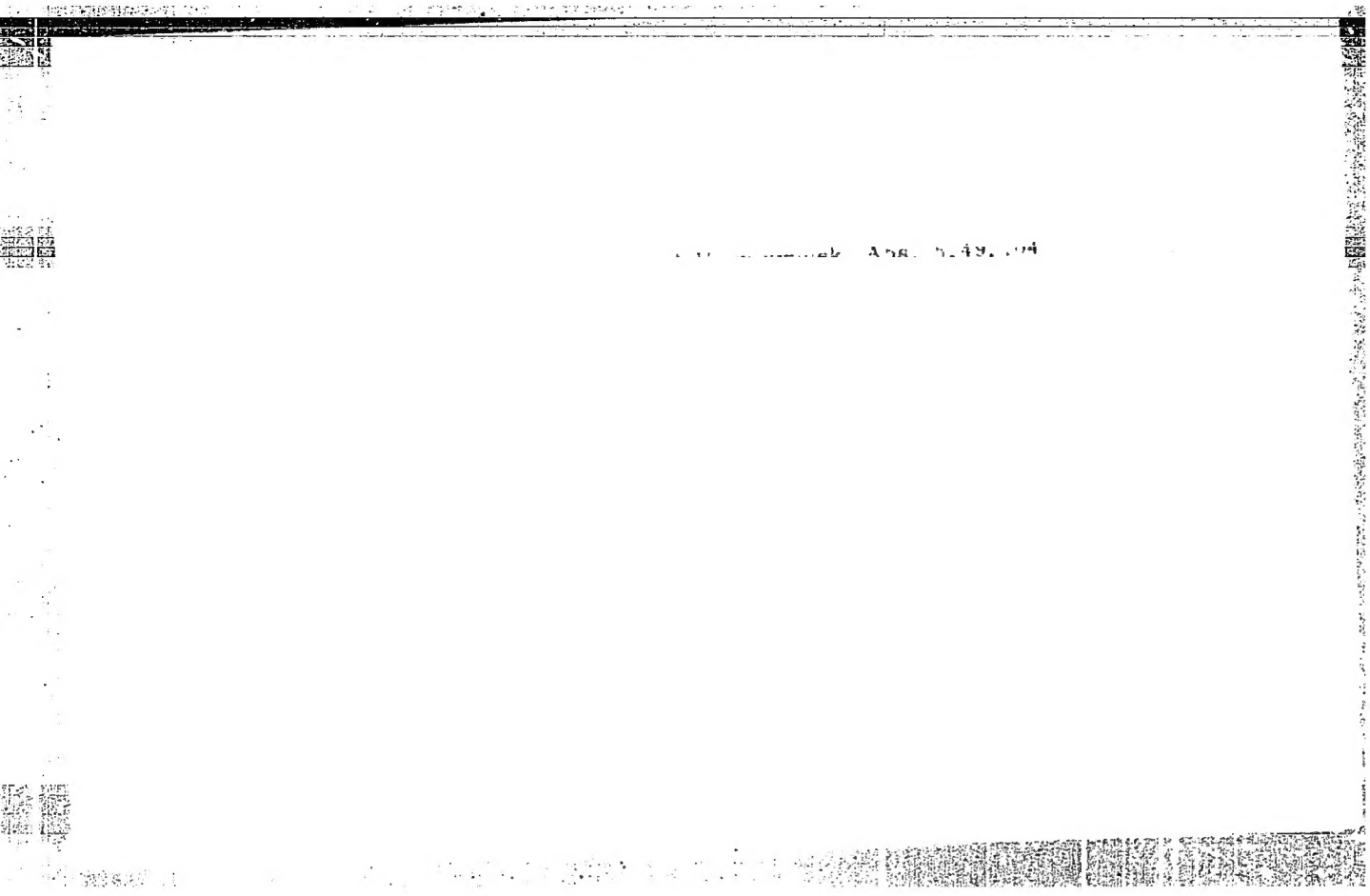

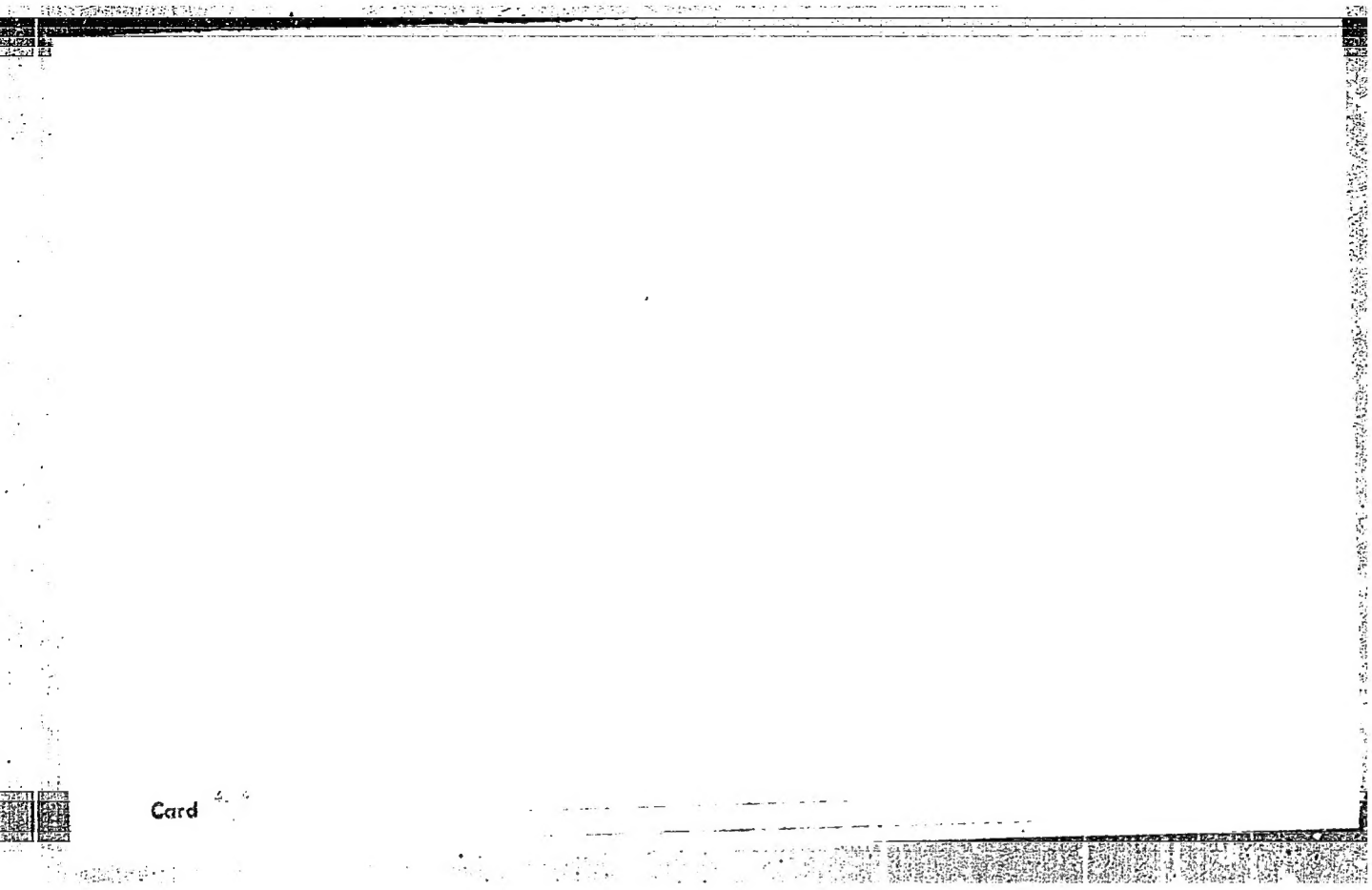

L 17782-66 EWT(1)/EWP(m)/EWA(d)/ETC(m)-6/EWA(1) WW

ACCESSION NR: AR5020403 SOURCE CODE: UR/0124/65/000/008/B057/B057

AUTHOR: Palatnik, I.B.; Temirbayev, D.Zh.

ORG: none

TITLE: Diffusion of free turbulent jets flowing from a rectangular nozzle

SOURCE: Ref. zh. Mekhanika, Abs. 8B385

REF SOURCE: Sb. Prob. teploenerg. i prikl. teplofiz. Vyp. 1. Alma-Ata, AN KazSSR, 1964, 18-28

TOPIC TAGS: nozzle flow, annular nozzle, turbulent jet, flow velocity, jet flow

TRANSLATION: The problem of propagation in the motionless atmosphere of a turbulent jet flowing from a rectangular nozzle was examined. Noting the fact that the initial system of equations was not closed and that it contained unknown correlations of velocities and gave only two equations for determining three component velocities, the authors attempted to find the field of the longitudinal component of the velocity, leaving the other two components undetermined. The method used

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L 17782-66
ACCESSION NR: AR5020403

was that of the equivalent problem of the thermal conductivity theory, i.e., the conversion of the system of coordinates was introduced, reducing the equation for determining the longitudinal component of the impulse to the equation of thermal conductivity, in which the functional relation describing this conversion had to be determined by the test. An experimental study was made also of the expansion of an immersed rectangular jet. During these tests a determination was made of the distribution of the longitudinal component of the impulse in the various lateral profiles of air jets flowing into the motionless air from nozzles with discharge cross sections of 20 x 20, 15 x 30, and 10 x 30 mm and a 39 m/sec velocity. A comparison of the experimental and calculated distributions of the impulse along the axis of the jet made it possible to determine the type of relationship, describing the conversion of the coordinates, for each of the cases studied and also for nozzles with lateral ratios of 1:5 and 1:20; the experiments on the latter were conducted by V.A. Turkus. With the help of these empirical functions and the solution of the thermal conductivity equation of the profile of the longitudinal impulse component in the various lateral profiles of the jet, comparisons were made with the corresponding experimental data. An estimate was given of the distance from the nozzle at which the jet flowing from the rectangular nozzle acquired an axial symmetry. References 13. O.V. Yakovlevskiy.

SUB CODE: 20

Card 2/2 TS

L 00565-66 EWT(1)/EWP(m)/EPF(c)/EPF(n)-2/EWG(m) WW

ACCESSION NR: AR5019365 UR/0124/65/000/007/B103/B103

SOURCE: Ref. zh. Mekhanika, Abs. 7B736

AUTHOR: Sakipov, Z.; Temirbayev, D. Zh.

TITLE: Momentum and heat transfer in a free turbulent stream

CITED SOURCE: Sb. Probl. teploenerg. i prikl. teplofiz. Vyp. 1, Alma-Ata, AN KazSSR, 1964, 47-72

TOPIC TAGS: free turbulent stream, momentum transfer, heat transfer, turbulent jet

TRANSLATION: The authors completed an experimental study of motion and heat exchange in lightly heated turbulent streams of various fluids submerged in an environment with analogous physical properties. The study sought to define the turbulent Pr number for streams of liquids with a physical Pr number in the range of 0.022 (Hg) to 350 (transformer oil). Other experiments involved streams of air and water. Velocity head and temperature at various cross sections of the stream, from 6 to 25 calibers distant from the nozzle, were measured by a Pitot tube and a Nichrome-Constantan thermocouple (the latter alloy contains 55% Co, 45% Ni). Initial measurement data were processed in the form of dimensionless velocity (related to its maximum value u_m at a given cross section) and dimen-

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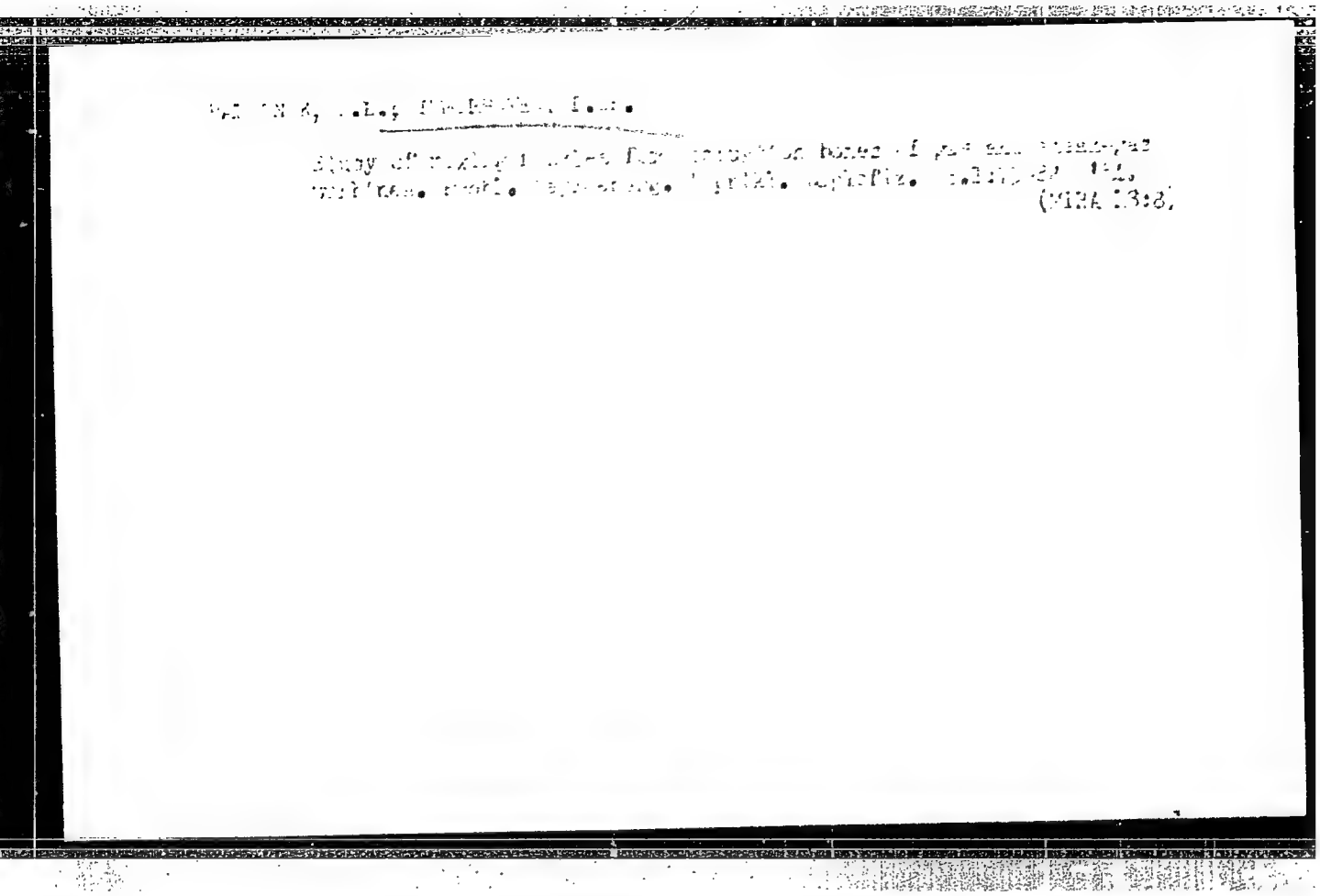
ACCESSION NR: AR5019365

0

sionless excess temperature as functions of the coordinate of similarity $\varphi = y/ax$. Also, curves were plotted to show the attenuation of axial velocity and temperature along the stream. It was noted that distributions of velocity and temperature within the studied range of layout parameters do not depend on the physical properties of a liquid. The authors used two methods to define the turbulent Pr numbers σ_t for the flows in question: the ratio of characteristic values of depth of the thermal and dynamic layers, and the exponent in relation $\Delta T/\Delta T_m = (u/u_m)^{\sigma_T}$. Analysis of results obtained in the process led the authors to conclude that the turbulent agitation process does not depend on physical characteristics of the fluid comprising the stream. Specifically, σ_t is a hydrodynamic property of a stream and can be considered as within the range of 0.70 - 0.75 for all experimental variants. Analogous values of δ_t were cited in reports of other authors studying the propagation of turbulent air streams. Bibl. with 8 titles. O V. Yakovlevskiy

SUB CODE: TD, ME ENCL: 00

Card 2/2



L 23980-66 EWT(1)/EWP(m)/EWT(m)/ETC(f)/EPF(n)-2/EWG(m)/EWA(d)/T/ETC(m)-6/
ACC NR: AT6006927 EWA(1) WW/DJ/GS SOURCE CODE: UR/0000/65/000/000/0407/0413

AUTHOR: Sakipov, Z. B.; Temirbayev, D. Zh.

ORG: Power Institute, AN KazSSR (Institut energetiki AN KazSSR)

TITLE: The relationship between the coefficients of turbulent momentum and heat transfer in a free turbulent jet

SOURCE: Teplo- i massoperenos. t. II: Teplo- i massoperenos pri vzaimodeystvii tel s potokami zhidkostey i gazov (Heat and mass transfer. v. 2: Heat and mass transfer in the interaction of bodies with liquid and gas flows). Minsk, Nauka i tekhnika, 1965, 407-413

TOPIC TAGS: turbulent jet, mass transfer, heat transfer, fluid flow, gas dynamics

ABSTRACT: The experimental investigations were carried out on units described previously in the literature. Before the experiments on mercury and oil jets, a series of experiments were made on air and water. Three series of experiments were made on air jets at velocities of 20, 30, and 40 meter/sec, and two series of measurements on water jets at 1.8 and 4 meter/sec. The measurements were made by conventional methods. The average error in determination of the velocity was about

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L 23980-66

ACC NR: AT6006927

5%, and of the temperature about 10% from the maximum values at the axis of the jet. A figure shows the profile of the dimensionless velocity at various cross sections of an axisymmetric jet for various fluids, including mercury and transformer oil. The experimental results establish the independence of the process of turbulent flow from the physical nature of the liquid jet formed. In addition, it is demonstrated that the turbulent Prandtl number, determined as the ratio of the coefficients of momentum and heat transfer, is purely hydrodynamic characteristic of the jet, and does not depend on the physical constants of the fluid. Orig. art. has: 6 figures.

SUB CODE: 20/ SUBM DATE: 09Nov65/ ORIG REF: 003/ OTH REF: 004

Card 2/2

L 24260-66 EWT(1)/EWP(m)/EWA(d)/EIC(m)-6/EWA(1) WW

ACC NR: AT6006928 SOURCE CODE: UR/0000/65/000/000/0414/0419

AUTHOR: Palatnik, I. B.; Temirbayev, D. Zh.

ORG: Power Institute, AN KazSSR (Institut energetiki AN KazSSR)

TITLE: Free turbulent jets issuing from a rectangular opening

SOURCE: Teplo- i massoperenos. t. II: Teplo- i massoperenos pri vzaimodeystvii tel s potokami zhidkostey i gazov (Heat and mass transfer. v. 2: Heat and mass transfer in the interaction of bodies with liquid and gas flows). Minsk, Nauka i tekhnika, 1965, 414-419

TOPIC TAGS: turbulent jet, mass transfer, fluid flow

ABSTRACT: For a three-dimensional flow, the field of the longitudinal component of the density of the momentum flux can be described by an equation of the form:

$$\frac{\partial \rho u^2}{\partial \tau} = \frac{\partial^2 \rho u^2}{\partial z^2} + \frac{\partial^2 \rho u^2}{\partial y^2}, \qquad (1)$$

where $\tau = \tau(x)$ is the subject to experimental determination as a function of the longitudinal coordinate x, and x and y are the transverse coordinates. For the case under consideration, this equation must be solved with the following boundary and initial conditions:

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$$\left.\begin{array}{l} \tau = 0, \quad |y| \leqslant a \\ x = 0, \quad |z| < b \end{array}\right\} \rho u^2 = \rho u_0^2 = \text{const}$$

$$\left.\begin{array}{l} y = 0 \\ z = 0 \end{array}\right\} \frac{\partial \rho u^2}{\partial y} = 0; \quad \frac{\partial \rho u^2}{\partial z} = 0 \qquad (2)$$

$$y \to \infty, \quad \frac{\partial \rho u^2}{\partial y} \to 0; \quad \rho u^2 \to 0$$

$$z \to \infty, \quad \frac{\partial \rho u^2}{\partial z} \to 0; \quad \rho u^2 \to 0$$

The solution of Eq. (1) with boundary and initial conditions (2), obtained by summation with respect to the initial conditions, has the following form:

$$\frac{\rho u^2}{\rho u_0^2} = \frac{1}{4\pi\tau} \int_{-a}^{a} \int_{-b}^{b} e^{\frac{(y-\alpha)^2 + (z-\beta)^2}{4\tau}} d\alpha d\beta, \qquad (3)$$

in which integration with respect to α and β is performed with respect to the area of the initial cross section of the nozzle. Experimental results lead to the conclusion that application of the method of the equivalent problem of the theory of heat conductivity gives fully satisfactory results and can be recommended for approximate calculation

L 24260-66

ACC NR: AT6006928 O

of processes involving the transfer of momentum in the flow of turbulent jets from a rectangular opening. Orig. art. has: 7 formulas and 4 figures.

SUB CODE: 20/ SUBM DATE: 09Nov65/ ORIG REF: 008

Card 3/3 dda

ACC NR: AT6023747 SOURCE CODE: UR/3149/66/000/003/0094/0098

AUTHOR: Palatnik, I. B.; Temirbayev, D. Zh.

ORG: none

54
52
BH1

TITLE: Selection of optimum characteristics of gas turbine combustion chamber flame holder

SOURCE: Alma-Ata. Kazakhskiy nauchno-issledovatel'skiy institut energetiki. Problemy teploenergetiki i prikladnoy teplofiziki, no. 3, 1966, 94-98

TOPIC TAGS: gas turbine, combustion chamber, combustion chamber flame holder, ~~gas turbine~~, flame holder

ABSTRACT: Experimental results are presented on the selection of certain parameters of a gas turbine combustion chamber flame holder. The experiments were conducted to study the problem of hydraulic drag, (particularly pressure drop across the perforations) and nonuniform mixing under variable operating conditions. To determine the effect of a reduction in pressure drop on the quality air-fuel mixing, tests were conducted with S parameter variations in the range $0.5 \leq S \leq 0.8$ (where S is the ratio of the total area of perforations to the flame holder cross section). The obtained results show that the pressure

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ACC NR: AT6023747

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drop across the perforations can be reduced if the relative pitch between the perforations is not smaller than 2.6 (where the relative pitch is defined as the ratio of the distance between the center of a perforation and its diameter). It was also found that at the same pressure drop, round perforations are more effective than the rectangular, i.e. they produce better air-fuel mixing. Orig. art. has: 5 figures and 1 formula. [AS]

SUB CODE: 21/ SUBM DATE: none/ ORIG REF: 003

Card 2/2 egh

TEMIRBAYEV, N.

Taxonomy of the Chirchik Valley vegetation. Vop.biol.i kraev. med.no.3:9-16 '62. (MIRA 16:3)
(CHIRCHIK VALLEY--PLANT COMMUNITIES)

TEMIRBAYEV, N.

Phytocenoses of the Chirchik Valley. Uzb. biol. zhur. 9 no.2: 58-61 '65. (MIRA 18:5)

1. Institut botaniki AN UzSSR.

TEMIR[illegible], .

Certain tendencies in the cultural development of the Soviet village in its present stage. Vest. AN Kazakh. SSR 21 no.7:8-14 Jl '65.
(MIRA 18:8)

TEMIRBEKOV, Zh.T.

Study of arbor viruses in East Kazakhstan Province; preliminary report. Zdrav. Kazakh. 22 no.5:55-60 '62. (MIRA 15:6)

1. Iz otdela virusologii (nauchnyy rukovoditel' - prof. Kh.Zh. Zhumatov) Kazakhskogo instituta epidemiologii, mikrobiologii i gigiyeny.

(EAST KAZAKHSTAN PROVINCE--VIRUS RESEARCH)
(ENCEPHALITIS)

TEMIRBULATOV, Kh.A.

Results of intrapleural talcum introduction in cyanotic congenital heart defects. Vrach. delo no.9:54-56 S '63.
(MIRA 16:10)

1. Kafedra torakal'noy khirurgii (zav. - chlen-korrespondent AMN SSSR, prof. N.M.Amosov) Kiyevskogo instituta usovershenstvovaniya vrachey.
(TALC — THERAPEUTIC USE) (CYANOSIS)

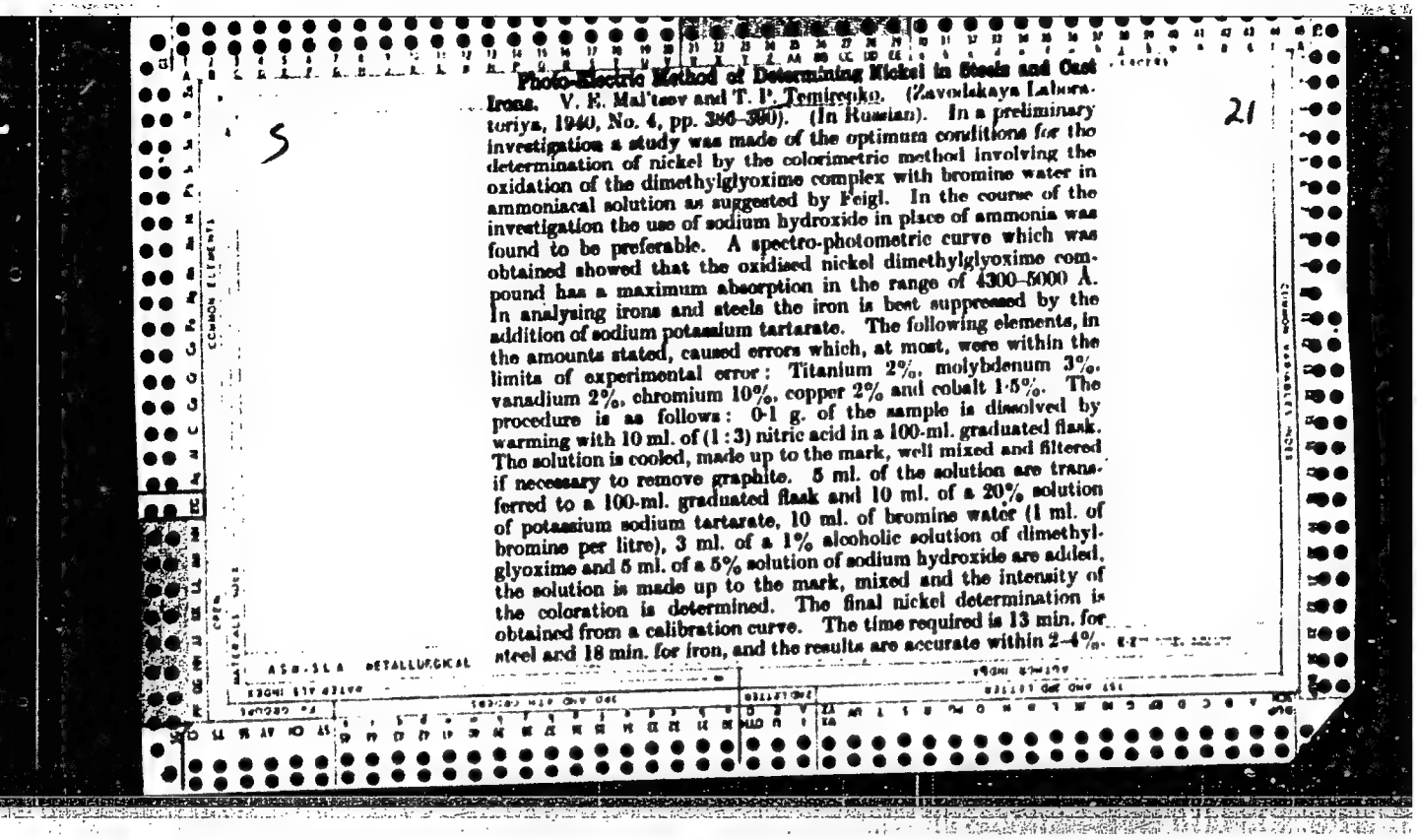
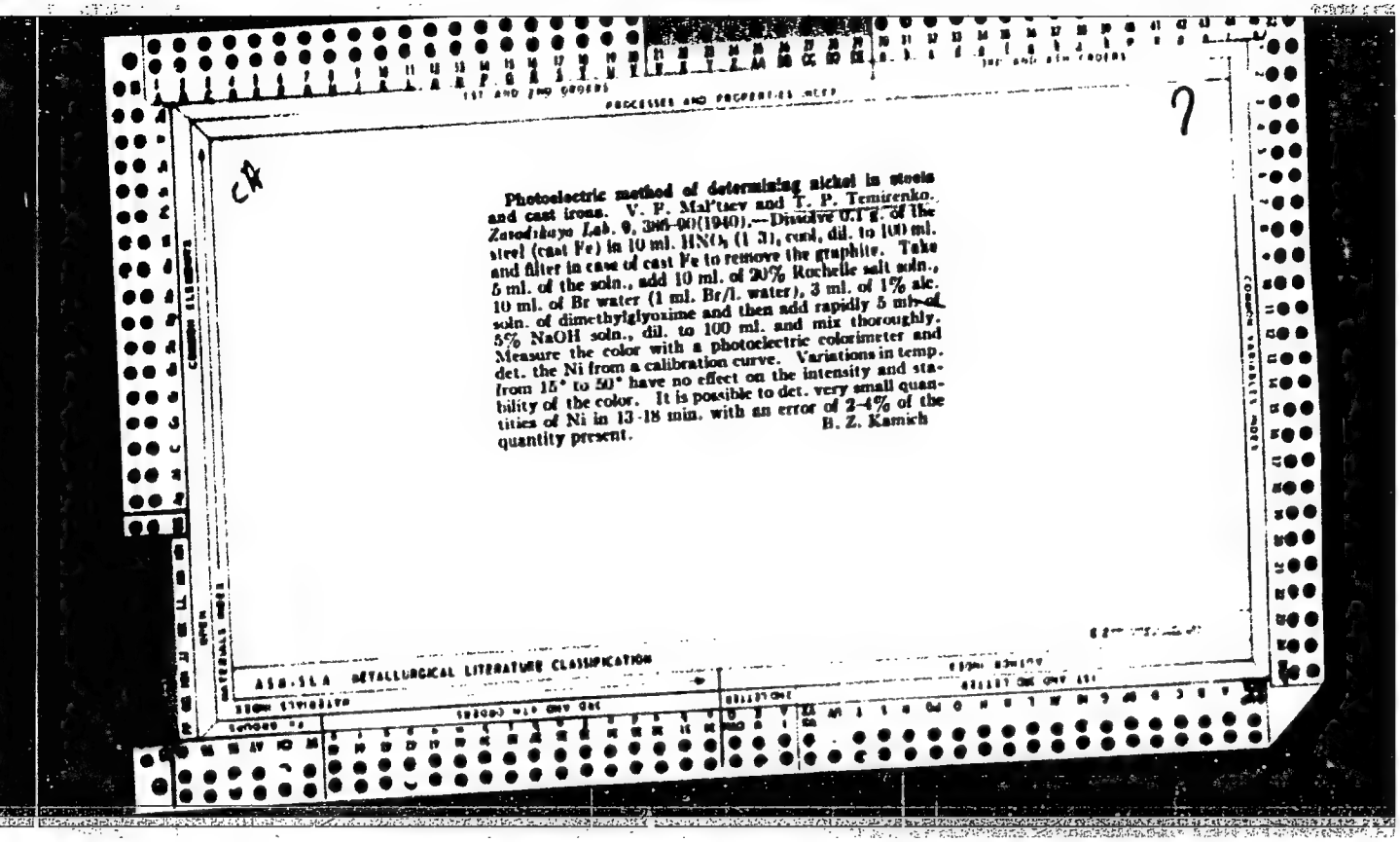
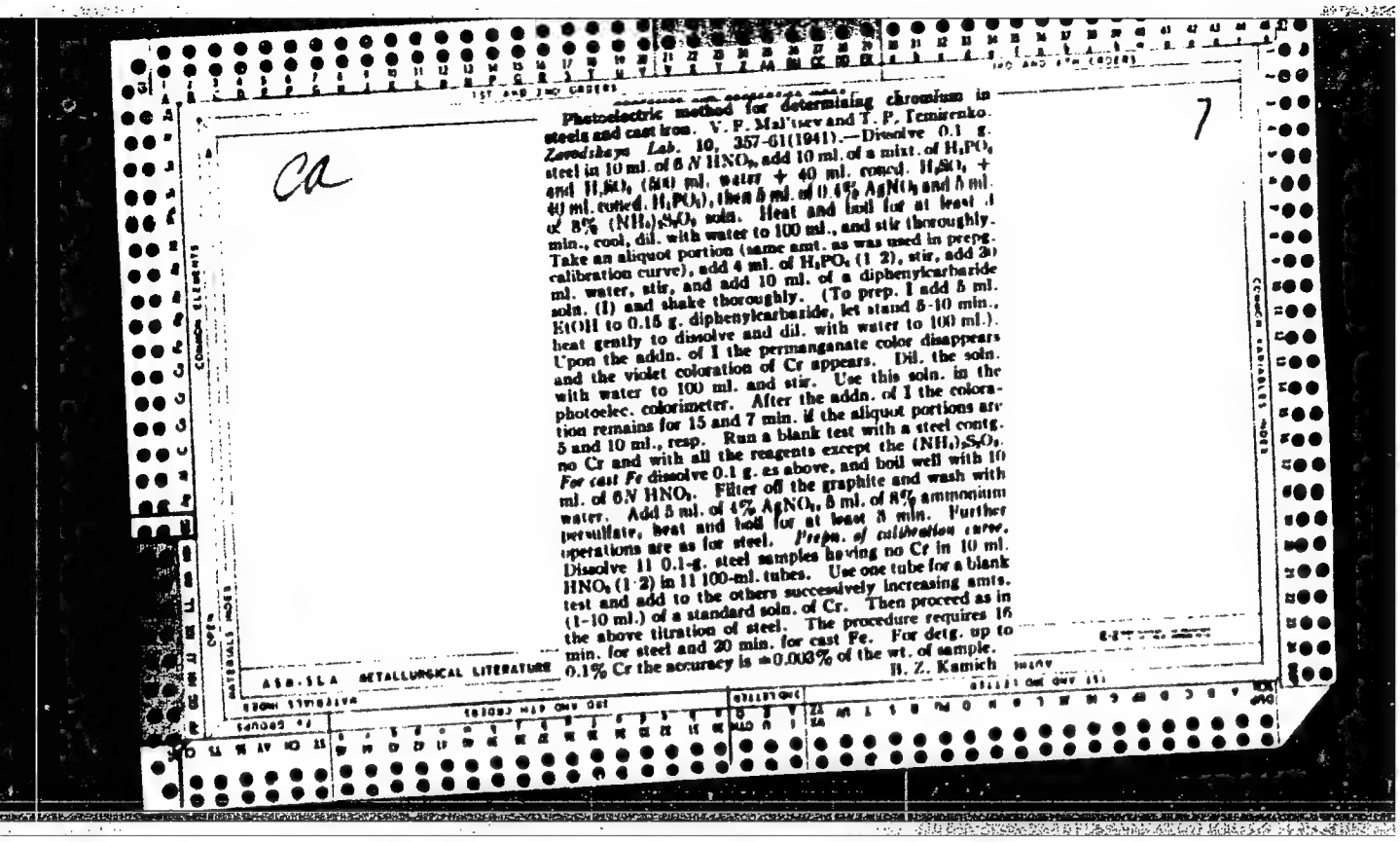


Photo-electric Method of Determining Nickel in Steels and Cast Irons. V. E. Mal'tsev and T. P. Temirenko. (Zavodskaya Laboratoriya, 1940, No. 4, pp. 386–390). (In Russian). In a preliminary investigation a study was made of the optimum conditions for the determination of nickel by the colorimetric method involving the oxidation of the dimethylglyoxime complex with bromine water in ammoniacal solution as suggested by Feigl. In the course of the investigation the use of sodium hydroxide in place of ammonia was found to be preferable. A spectro-photometric curve which was obtained showed that the oxidised nickel dimethylglyoxime compound has a maximum absorption in the range of 4300–5000 Å. In analysing irons and steels the iron is best suppressed by the addition of sodium potassium tartarate. The following elements, in the amounts stated, caused errors which, at most, were within the limits of experimental error: Titanium 2%, molybdenum 3%, vanadium 2%, chromium 10%, copper 2% and cobalt 1·5%. The procedure is as follows: 0·1 g. of the sample is dissolved by warming with 10 ml. of (1 : 3) nitric acid in a 100-ml. graduated flask. The solution is cooled, made up to the mark, well mixed and filtered if necessary to remove graphite. 5 ml. of the solution are transferred to a 100-ml. graduated flask and 10 ml. of a 20% solution of potassium sodium tartarate, 10 ml. of bromine water (1 ml. of bromine per litre), 3 ml. of a 1% alcoholic solution of dimethylglyoxime and 5 ml. of a 5% solution of sodium hydroxide are added, the solution is made up to the mark, mixed and the intensity of the coloration is determined. The final nickel determination is obtained from a calibration curve. The time required is 13 min. for steel and 18 min. for iron, and the results are accurate within 2–4%.



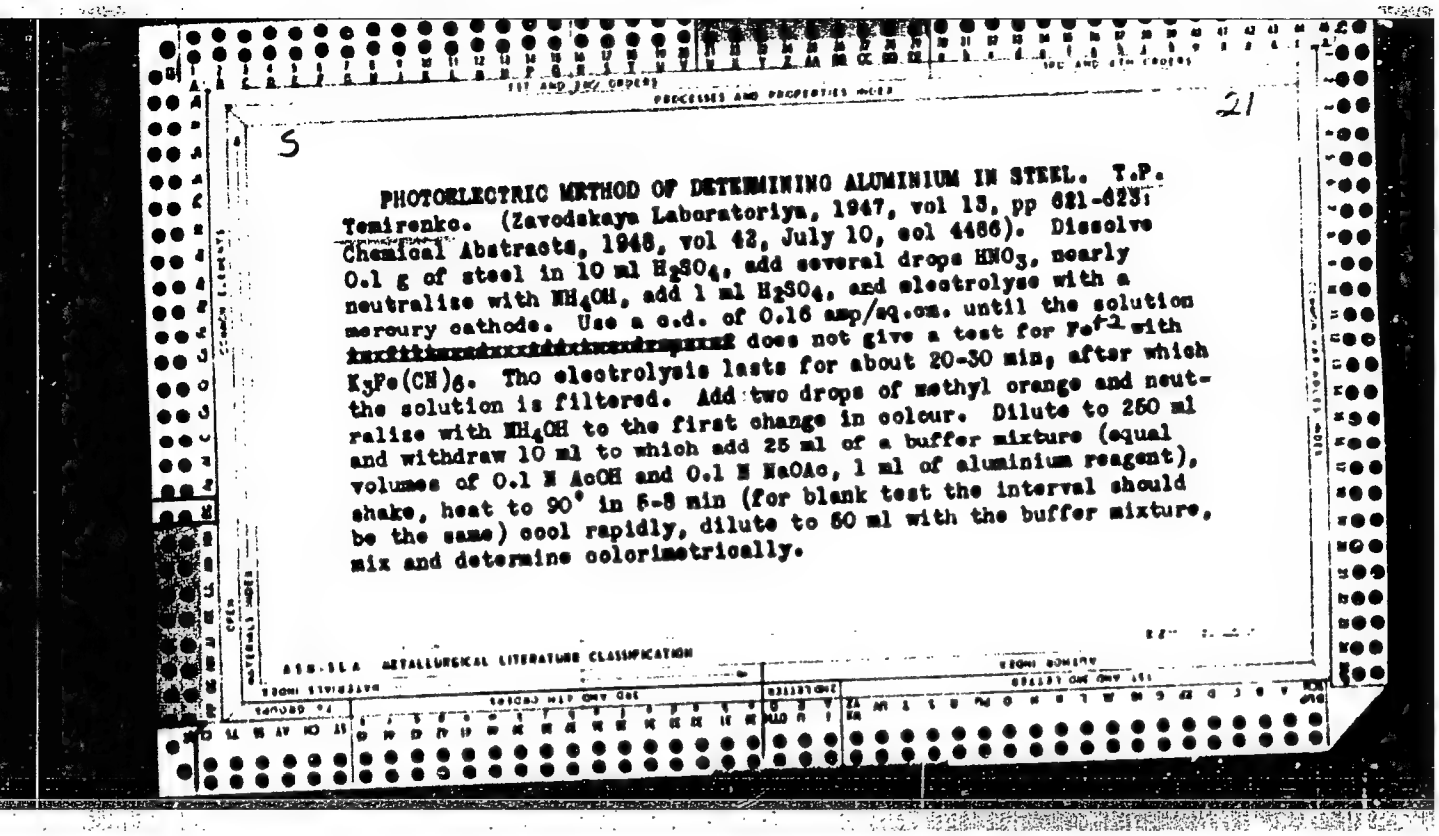
Photoelectric method of determining nickel in steels and cast irons. V. P. Mal'tsev and T. P. Temirenko. *Zavodskaya Lab.* 9, 386-90(1940).—Dissolve 0.1 g. of the steel (cast Fe) in 10 ml. HNO_3 (1:3), cool, dil. to 100 ml. and filter in case of cast Fe to remove the graphite. Take 5 ml. of the soln., add 10 ml. of 20% Rochelle salt soln., 10 ml. of Br water (1 ml. Br/l. water), 3 ml. of 1% alc. soln. of dimethylglyoxime and then add rapidly 5 ml. of 5% NaOH soln., dil. to 100 ml. and mix thoroughly. Measure the color with a photoelectric colorimeter and det. the Ni from a calibration curve. Variations in temp. from 15° to 50° have no effect on the intensity and stability of the color. It is possible to det. very small quantities of Ni in 13-18 min. with an error of 2-4% of the quantity present.

B. Z. Kamich



Photoelectric method for determining chromium in steels and cast iron. V. P. Mal'tsev and T. P. Temirenko. *Zavodskaya Lab.* 10, 357-61(1941).—Dissolve 0.1 g. steel in 10 ml. of 6 *N* HNO_3, add 10 ml. of a mixt. of H_3PO_4 and H_2SO_4 (5:4) ml. water + 40 ml. concd. H_2SO_4 + 40 ml. cooled. H_3PO_4), then 5 ml. of 0.4% $AgNO_3$ and 5 ml. of 8% $(NH_4)_2S_2O_8$ soln. Heat and boil for at least 1 min., cool, dil. with water to 100 ml., and stir thoroughly. Take an aliquot portion (same amt. as was used in prepg. calibration curve), add 4 ml. of H_3PO_4 (1 2), stir, add 20 ml. water, stir, and add 10 ml. of a diphenylcarbaride soln. (I) and shake thoroughly. (To prep. I add 5 ml. EtOH to 0.15 g. diphenylcarbaride, let stand 5-10 min., heat gently to dissolve and dil. with water to 100 ml.). Upon the addn. of I the permanganate color disappears and the violet coloration of Cr appears. Dil. the soln. with water to 100 ml. and stir. Use this soln. in the photoelec. colorimeter. After the addn. of I the coloration remains for 15 and 7 min. if the aliquot portions are 5 and 10 ml., resp. Run a blank test with a steel contg. no Cr and with all the reagents except the $(NH_4)_2S_2O_8$. *For cast Fe* dissolve 0.1 g. as above, and boil well with 10 ml. of 6*N* HNO_3. Filter off the graphite and wash with water. Add 5 ml. of 4% $AgNO_3$, 5 ml. of 8% ammonium persulfate, heat and boil for at least 3 min. Further operations are as for steel. *Prepn. of calibration curve.* Dissolve 11 0.1-g. steel samples having no Cr in 10 ml. HNO_3 (1·2) in 11 100-ml. tubes. Use one tube for a blank test and add to the others successively increasing amts. (1-10 ml.) of a standard soln. of Cr. Then proceed as in the above titration of steel. The procedure requires 16 min. for steel and 20 min. for cast Fe. For detg. up to 0.1% Cr the accuracy is ±0.003% of the wt. of sample.

B. Z. Kamich



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PHOTOELECTRIC METHOD OF DETERMINING ALUMINIUM IN STEEL. T.P. Temirenko. (Zavodskaya Laboratoriya, 1947, vol 13, pp 621-623; Chemical Abstracts, 1948, vol 42, July 10, col 4486). Dissolve 0.1 g of steel in 10 ml H_2SO_4, add several drops HNO_3, nearly neutralise with NH_4OH, add 1 ml H_2SO_4, and electrolyse with a mercury cathode. Use a c.d. of 0.16 amp/sq.cm. until the solution does not give a test for Fe^{+2} with $K_4Fe(CN)_6$. The electrolysis lasts for about 20-30 min, after which the solution is filtered. Add two drops of methyl orange and neutralise with NH_4OH to the first change in colour. Dilute to 250 ml and withdraw 10 ml to which add 25 ml of a buffer mixture (equal volumes of 0.1 N AcOH and 0.1 N NaOAc, 1 ml of aluminium reagent), shake, heat to 90° in 5-8 min (for blank test the interval should be the same) cool rapidly, dilute to 50 ml with the buffer mixture, mix and determine colorimetrically.

TEMIRENKO, T. P.

PA 153T14

USSR/Engineering - Analysis, Photoelectric Steel, Silicon in

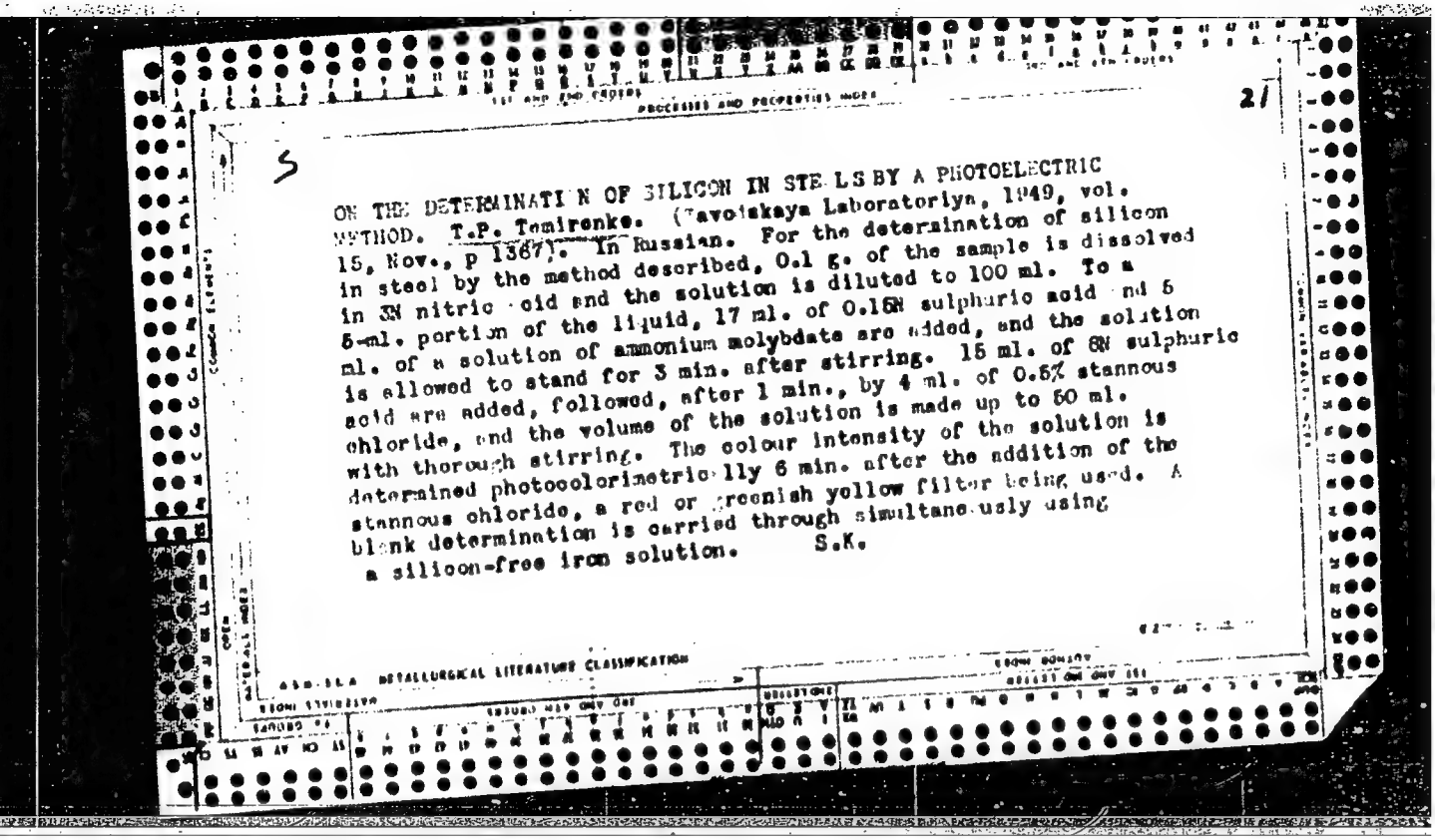
Nov 49

"Determination of Silicon in Steels by the Photoelectric Method," T. P. Temirenko, Sci Res Tube Inst, 1 p

"Zavod Lab" No 11

Photoelectric method of determining silicon in ordinary carbon and low-alloy steels and in cast iron is used widely in plant laboratories. Explains how method can be simplified without impairing accuracy of results, and without using either perhydrol or hydroxylamine hydrochloride.

153T14



S

ON THE DETERMINATION OF SILICON IN STEELS BY A PHOTOELECTRIC METHOD. T.P. Tomirenko. (Zavodskaya Laboratoriya, 1949, vol. 15, Nov., p 1367). In Russian. For the determination of silicon in steel by the method described, 0.1 g. of the sample is dissolved in 3N nitric acid and the solution is diluted to 100 ml. To a 5-ml. portion of the liquid, 17 ml. of 0.15N sulphuric acid and 5 ml. of a solution of ammonium molybdate are added, and the solution is allowed to stand for 3 min. after stirring. 15 ml. of 8N sulphuric acid are added, followed, after 1 min., by 4 ml. of 0.5% stannous chloride, and the volume of the solution is made up to 50 ml. with thorough stirring. The colour intensity of the solution is determined photocolorimetrically 6 min. after the addition of the stannous chloride, a red or greenish yellow filter being used. A blank determination is carried through simultaneously using a silicon-free iron solution. S.K.

SAGATOV, R.S.; TAMIRGALIYEV, A.

Present status and prospects of development of pharmaceutics in the Uzbek S.S.R. from 1959 to 1965. Med. zhur. Uzb. no.6:3-6 Je '60. (MIRA 15:2)

(UZBEKISTAN--PHARMACY)

TEMIRGALIYEV, K.

Development of the Emba oil region under the Soviet regime. Trudy Inst. nefti AN Kazakh.SSR 4:3-9 '61. (MIRA 16:4)
(Emba region--Petroleum industry)

POLYNSKIY, I.T.; TEMIRGALIYEV, S.; MASTITSKIY, Ye.P., kand.tekhn.nauk

Improvement in the insertion of a point in a triangle. Sbor. nauch. trud. Kaz GMI no.19:40-46 '60. (MIRA 15:3)
(Triangulation)

TEMIRGALEYEVA, R. Sh.

TEMIRGALEYEVA, R. Sh. -- "Effect of Physiological Sleep and Certain Pharmacological Neurotropic Agents on the Heart in Hypertension According to Electrocardiographic Data." Sub 26 Mar 52, Acad Med Sci USSR. (Dissertation for the Degree of Candidate in Medical Sciences.)

SO: Vechernaya Moskva January-December 1952

[redacted], G.

Neft' idet! (Petroleum is flowing!). Lit. zapis' A. Lastlova. Moskva, Profizdat, 1953. 71 p. (Novatory sotr. proizvodstva)

SO: Monthly List of Russian Accessions, Vol. 7, No. 1, Oct. 1954

TEMIRKHANOV, Gadzhi; PANKOVA, V., red.; MALEK, Z., tekhn. red.

[Petroleum is coming] Neft' idet. Moskva, Profizdat, 1953. 69 p. (MIRA 16:7)

1. Burovoy master Stalinskoy kontory bureniya tresta "Stalinneft'", Stalinskiy rayon (for Temirkhanov).
(Azerbaijan--Petroleum production)

NIKOL'SKIY, V.A., professor; TEMIROV, E.S.

Angiography of the brain using cardiotrast. Vop.neirokhir. 19 no.5:25-28 S-O '55. (MLRA 8:11)

1. Iz kliniki nervnykh bolezney i neyrokhirurgii Rostovskogo-na-Domu meditsinskogo instituta.

(ANGIOGRAPHY,
cerebral, with cardiotrast)
(BRAIN, blood supply,
angiography, with cardiotrast)
(CONTRAST, MEDIA,
cardiotrast in cerebral angiography)

USSR / Human and Animal Morphology (Normal and Pathological). General Problems. S

Abs Jour : Ref. Zhur - Biologiya, No. 3, 1959, 12212

Author : Temirov, E. S.
Inst : Rostov n/D. Medical Institute
Title : On the Problem of Surgical Anatomy of the Neurovascular Bundle in the Region of the Carotid Triangle.

Orig Pub : Tr. Otchetn. nauchn. konferentsii (Rostovsk.-n/D. med. in-t) za 1956 g. Rostov-na-Donu, 1957, 225-228

Abstract : From data of 94 exposed common carotid arteries (CCA) in 88 patients, it was shown that in relation to the trachea and larynx, CCA may occupy lateral (59 cases), anterolateral (23) and posteriolateral (12) positions. The internal jugular

Card 1/2

TEMIROV, M.S.

Transcutaneous angiography of the brain. Vop. neirokhir. 21 no.5: 32-33 S-O '57. (MIRA 11:2)

1. Klinika nervnykh bolezney i neyrokhirurgii Rostovskogo-na-Donu meditsinskogo instituta.
(ANGIOGRAPHY, CEREBRAL
trans-cutaneous)

TEMIROV, E.S.

Automatic syringe for cerebral angiography. Vop.neirokhir.
22 no.1:58-61 Ja-F '58 (MIRA 11:3)

1. Klinika nervnykh bolezney i neyrokhirurgii Rostovskogo-na-Donu meditsinskogo instituta.
(ANGIOGRAPHY, CEREBRAL, apparatus and instruments, automatic syringe (Rus)

TEMIROV, E.S.

Vertebral angiography in the diagnosis of tumors of the posterior segments of the cerebral hemispheres [with summary in English, p. 54]. Vop.neirokhir. 22 no.6:8-10 N-D '58. (MIRA 12:2)

1. Klinika nervnykh bolezney i neyrokhirurgii Rostovskogo meditsinskogo instituta.

(BRAIN NEOPLASMS, diagnosis,
vertebral angiography in tumor of posterior cerebral segments (Rus))
(ANGIOGRAPHY,
vertebral, in cancer of posterior cerebral segments (Rus))

EXCERPTA MEDICA Sec 8 Vol 12/8 Neurology Aug 59

3734. THE CARBOHYDRATE METABOLISM IN THE BRAIN AND IN THE MUSCLES IN CASES OF CEREBRAL TUMOURS (Russian text) - Nikolski: V.A., Martirosyan V.V. and Temirov E.S. - ZH. NEVROPAT. I PSIKHIAT. 1958, 58/5 (560-566) Tables 4

In 32 patients with intracranial tumours of various nature, the sugar coefficient was determined in blood from the carotid artery and the jugular and internal cubital veins. In cases of intracranial neoplasm the carbohydrate metabolism in the brain and in the muscle tissue was seriously disturbed. In cases of external cerebral tumours the blood sugar absorption capacity of the brain and muscle tissues was greatly diminished, whereas in cases of internal brain tumours it was very often increased. In the muscle tissue it was decreased but not so much as in cases of external brain tumour. The degree of sugar absorption by the brain and the severity of the general cerebral symptoms depend on the stage of development of the tumour. In 5 patients examination of the gases of the blood from the carotid artery and from the internal jugular vein was carried out. It was concluded that in cases of intracranial neoplasm cerebral hypoxia may be present. (VIII, 5, 16)

CLINIC of NERVOUS DISEASES
& NEUROSURGERY
ROSTOV-ON-DON MEDICAL INST.

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755220005-4"

TEMIROV, E.S.

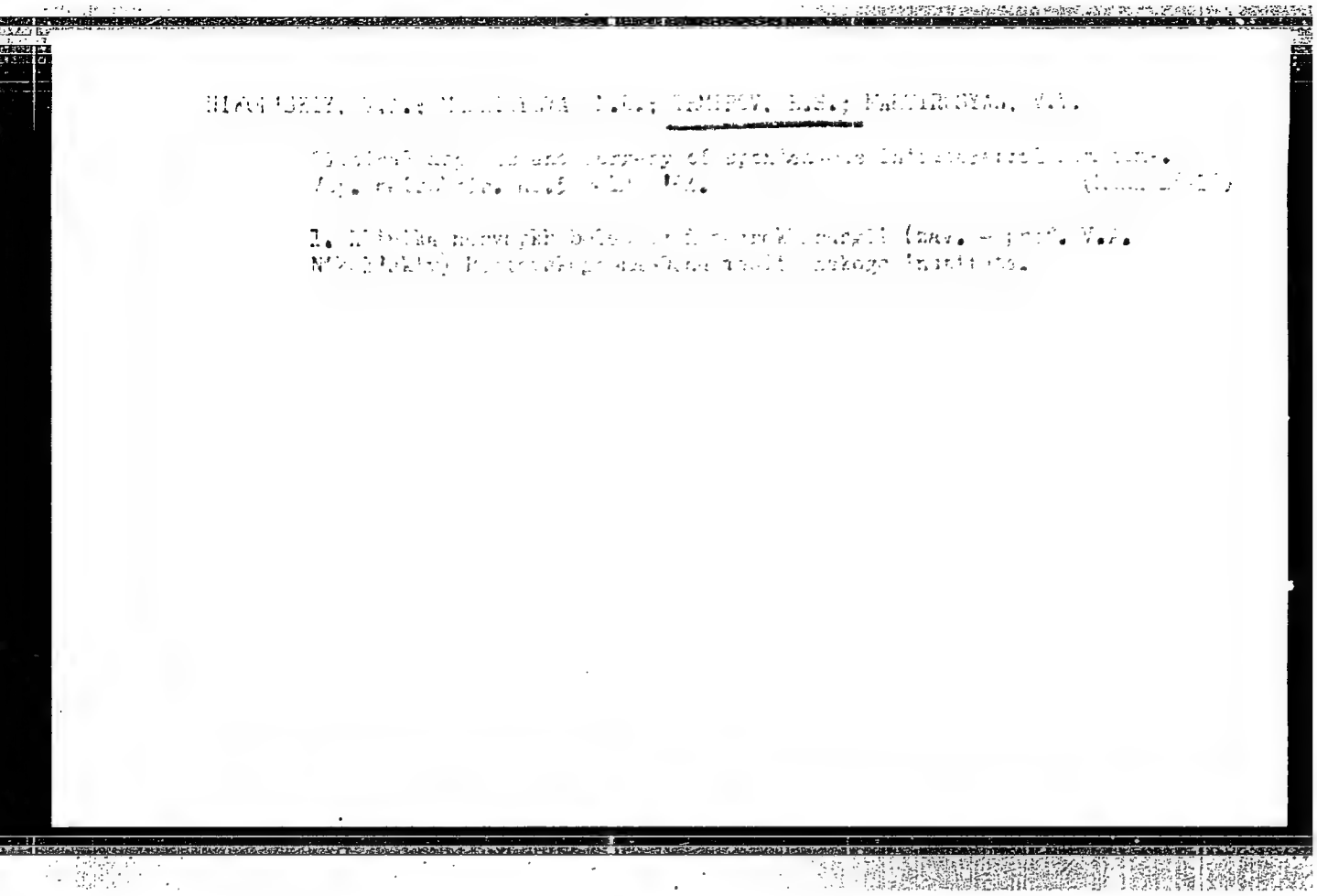
Cerebral angiography with triiotrast. Vest.rent.i rad. 34 no.6: 69-72 N-D '59. (MIRA 13:5)

1. Iz kliniki nervnykh bolezney i neyrokhirurgii (zav. - prof. V.A. Nikol'skiy) Rostovskogo-na-Donu meditsinskogo instituta.
(IODIZED OILS)
(CEREBRAL ANGIOGRAPHY)

TEMIROV, E.S.; SHLEPOVA, T.A. (Rostov-na Domu)

Spontaneous recovery from subdural hematomas. Vop.neirokhir. no.5:42-45 '61. (MIRA 14:11)

1. Klinika nervnykh bolezney i neyrokhirurgii Rostovskogo-na-Domu meditsinskogo instituta.
(DURA MATER--TUMORS) (HEMATOMAS)



KIPNIS, I.S., inzh.; TEMIROV, M.D., inzh.

Plant experience in contact welding of casings. Sudostroenie 24 no.11:62-63 N '58. (MIRA 12:1)
(Electric welding)

43296

S/135/62/000/012/008/015
A006/A101

12300 24VF

AUTHORS: Temirov, M. D., Ishchenko, V. I., Engineers

TITLE: Spot-welding of a special aluminum section with a sheet

PERIODICAL: Svarochnoye proizvodstvo, no. 12, 1962, 22 - 23

TEXT: The Central welding laboratory of the Kaliningrad sovnarkhoz has designed special-shaped upper electrodes (2) for spot welding ПВ -221 (PV-221) sections (1) to sheets on МТИП (MTIP) resistance welding machines (Figure 1). The lower electrode(3) is oval-shaped. Conditions for welding АМг 6 (AMg6)-alloy ribs on a MTIP-1000 machine are given. Comparative tests were made with specimens subjected to discontinuous argon-arc and spot welding. Shearing and breaking tests yielded the following results:

Test method	Welding method	Rupture load on the weld in kg	Rupture load on a spot in kg
Shearing	Resistance	5,730	1,141
	Argon-arc	3,420	-
Breaking	Resistance	2,986	597
	Argon-arc	2,220	-

Card 1/ 2

The described electrodes were used during one year and showed satisfactory results, i.e. higher efficiency, savings in argon, electrode wire, and tungsten, and reduction of expenses caused by the straightening of assemblies after argon-arc welding. Welding conditions:

Thickness in mm	Welding force in kg	Peening force in kg	Transformer step	Welding time in sec
2 - 3.5	900	2,100	VI	0.4
3 - 3.5	1,000	2,200	VI	0.5

There are 2 tables and 5 figures.

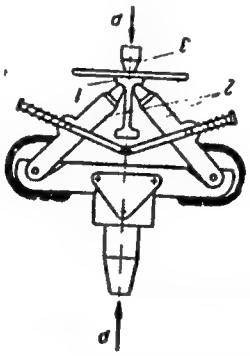


Figure 1. Special electrodes for welding PV-type sections to a sheet

TEMIROV, S.

Honorably welcome the forthcoming Plenum of the Central Committee of the Communist Party of the Soviet Union. Muk.-elev. prom. 25 no.11:32 N '59 (MIRA 13:3)

1. Zamestitel' direktora Sosnovskogo khlebopriyemnogo punkta Semipalatinskoy oblasti.
(Semipalatinsk Province--Grain elevators)

SHAPIRO, Ya.; TEMIROV, T.

Riemann spaces with a reducible isotropy group. Dokl. AN SSSR 157 no.3:539-541 Jl '64. (MIRA 17:7)

1. Gor'kovskiy gosudarstvennyy universitet imeni Lobachevskogo. Predstavleno akademikom A.N. Kolmogorovym.

SHAPIRO, Ya.; TEMIROV, T.

Motions in Riemann spaces with a reducible isotropy group.
Sib. mat. zhur. 6 no.6:1407-1414 N-D '65.
(MIRA 18:12)

TEMIROV, Yu.K.

Heterogenic peritoneal membrane in the treatment of some corneal injuries. Oft.zhur. 15 no.7:432-438 '60. (MIRA 13:11)

1. Iz glaznogo otdeleniya (zav. - kand.med.nauk S.Ya.Miminoshvili) Sukhumskoy respublikanskoy bol'nitsy imeni prof. A.A.Ostroumova.
(CORNEA--WOUNDS AND INJURIES)
(PERITONEUM--TRANSPLANTATION)

NIKOL'SKIY, V.A.; TEMIROV, Ye.S.

Chronic subdural hematomas. Vop.neirokhir. 24 no.4:10-15 Je-Ag '60. (MIRA 13:12)

(BRAIN--HEMORRHAGE)

ARENDT, A. A. and [illegible], T. G., both at the Institute of Neurosurgery imeni N. N. Burdenko, Academy of Medical Sciences USSR, Moscow - "Cholesteatomas of the spinal cord after tuberculosis meningitis" - paper to be presented at the General Scientific Session of 17 Oct 61

ARUTYUNOV, A. I., Director, Ukrainian Scientific Research Institute of Neurosurgery, Kiev - "Cerebral edema and the problem of raising intracranial pressure" - paper to be presented at the General Scientific Session of 16 Oct 61

NIKOL'SKIY, V. A., Head, Clinic of Nervous Diseases and Neurosurgery, North Caucasus Medical Institute, Rostov-on-Don, and [illegible], Ye. S., Member, same Clinic - "Types of vascularization of intracranial tumors" - paper to be presented at the General Scientific Session of 19 Oct 61

SHAMOV, V. N., ORLOVA, A. N., [illegible], K. B., and VOLKOV, A. A., all at the Leningrad Neurosurgical Institute imeni A. L. Polenov, and NOMETS, T. A., Leningrad - "Combined surgical and radiological treatment of intracerebral tumors" - paper to be presented at the General Scientific Session 16 Oct 61

YEGOROV, B. G., Member, Institute of Neurosurgery imeni N. N. Burdenko, Academy of Medical Sciences USSR, Moscow - "The methods and follow-up of surgical treatment of tumors of lateral and third ventricles of the brain" - paper to be presented at the General Scientific Session 17 Oct 61

report to be submitted for the Second Intl. Congress of Neurological Surgery, 14-20 October 1961, Wash. D C.

(10)

CHUDAKOV, Konstantin Petrovich; FEYGIN, Leonid Aleksandrovich; PETROV, Il'ya Vladimirovich; TEMIROV, Yuriy Sergeyevich; PEREVALYUK, M.V., red.izd-va; SHERSTNEVA, N.V., tekhn.red.

[Maintenance of construction machinery] Tekhnicheskoe obsluzhivanie stroitel'nykh mashin. [By] K.P.Chudakov i dr. Moskva, Gosstroiizdat, 1963. 259 p. (MIRA 16:12)
(Construction equipment--Maintenance and repair)

VASSERMAN, Z.M.; TEMIROVA, B.T.

Blood protein fractions in immunological and drug therapy. Sbor. trud. Uz nauch.-issl. tub. inst. 3:24-31 '57. (MIRA 14:5)
(TUBERCULOSIS) (BLOOD PROTEINS)

TEMIROVA, K. V.

"Lymphohistiocytosis of the Exudate of Cantharidic Blisters as an Index of the Changed Reactivity of an Organism During Certain Internal Diseases." Cand Med Sci, First Leningrad Medical Inst, Leningrad, 1953. (RZhBiol, No6, Nov 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (11)

SO: Sum. No. 521, 2 Jun 55

TEMIROVA, K.V., kand.med.nauk; BOYKOVA, N.V., kand.med.nauk (Leningrad)

Thromboartheritis of the small branches of the pulmonary artery. Klin.med. no.4:135-138 '62. (MIRA 15:5)

1. Iz kafedry gospital'noy terapii (zav. - prof. P.K. Bulatov) i kafedry patologicheskoy anatomii (zav. - prof. M.A. Zakhar'yevskaya) I Leningradskogo meditsinskogo instituta imeni akad. I.P. Pavlova.

(PULMONARY EMBOLISM)

TEMIROVA, M.F.

Some decorative poppies for gardens and parks of Erivan. Biul. Bot.sada [Eriv.] no.8:5-16 '49. (MLRA 9:8)
(Erivan--Poppy)

TEMIROVA, M.F.

Some features of poppy cultivation in Erivan. Biul.Bot. sada [Eriv,] no.10:65-68 '50. (MLRA 9:8)

(Erivan--Poppy)

ASTVATSATRYAN, Z.A.; TEMIROVA, M.F.

Direct sowing of annual flowers in open ground in Erivan. Izv.AN Arm.SSR.Biol.i sel'khoz.nauki. 3 no.12:1121-1127 '50. (MLRA 9:8)
(Erivan--Floriculture)

TEMIROVA, M.F.

Some results of the intruduction of flowering plants in the Erivan botanical garden. Izv.AN Arm.SSR.Biol.i sel'khoz.nauki. 4 no.10: 921-933 '51. (MLRA 9:8)

1. Botanicheskiy institut i sad Akademii nauk Armyanskoy SSR.
(Erivan--Plant introduction)

TEMIROVA, M.I.

Propagation of hyacinths in Erivan. Izv.AN Arm.SSR.Biol.i sel'khoz. nauki. 5 no.1:113-116 '52. (MLRA 9:8)

1. Botanicheskiy institut i sad Akdademii nauk Armyanskoy SSR.
(Erivan--Hyacinths)

ASTVATSATRYAN, Z.A.; TEMIROVA, M.F.; VARTANYAN, A.K.

A new background plant for bouquets. Izv.AN Arm.SSR.Biol.i sel'khoz. nauki 6 no.3:35-41 '53. (MLRA 9:8)

1. Botanicheskiy institut Akademii nauk Arm.SSR.
(ERIVAN--BRASSICACEAE) (FLOWERS--ARRANGEMENT)

TEMIROVA, M.F.

Perennial flowering plants in commercial floriculture. Biul. Bot.Sada [Kriv.] no.13:61-82 '53. (MLRA 9:8)
(Perenials)

TEMIROVA, M.F.

Effect of heteroauxin on the rooting of Phlox paniculata L. cuttings. Izv.AN Arm.SSR.Biol.i sel'khoz.nauki 7 no.2:101-102 '54. (MLRA 9:8)

1. Botanicheskiy institut Akademii nauk Armyanskoy SSR.
(Erivan--Phlox) (Indoleacetic acid)
(Growth promoting substances)

TEMIROVA, M.F.

Regeneration of prunes and cherries by root suckers. Izv.AN Arm. SSR.Biol.i sel'khoz.nauki 8 no.1:35-38 Ja '55. (MLRA 9:8)
(Prune) (Cherry)

TEMIRYAZEVA, S.K.

Category : USSR/Electronics - Cathode Ray Tubes H-6

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4304

Author : Artem'ev, N.L., Sokolov, V.K., Temiryazeva, S.K.
Title : Television Transmitting Tube with Photoresistance

Orig Pub : Radiotekhnika i elektronika, 1956, 1, No 2, 245-252

Abstract : Description of the arrangement, of the principle of operation, and of the characteristics of a transmitting television tube with photoresistance (vidicon) -- LI-18, operating with fast electrons. The procedure is analyzed for the choice of the operating conditions so as to insure optimum parameters. Bibliography, 8 titles.

Card : 1/1

TEMISH, S.G.

Safety measures in the testing of one of the sections of the Bukhara--Ural Gas Pipeline. Stroi. trub. 9 no.7:23 Jl '64. (MIRA 17:11)

1. SU-1 tresta Vostokneftegrovodstroy, Novokuybyshevsk.

TSUKKERMAN, A.G.

Thermodynamics

Notes on the article of I.I. TSukkerman, "Determination of thermal constants by means of probes." Zhur.tekh.fiz. 22, no. 2, 1952.

9. Monthly List of Russian Accessions, Library of Congress, AUGUST 1952 ~~1953~~ Uncl.

TEMKIN, A. G.

USSR/Engineering - Cooling Apr 52

"Geometric Criterion of Cooling, " A.G. Temkin

"Zhur Tekh Fiz" Vol XXII, No 4, pp 635-647

Analyzes speed of cooling depending on relation of surface to vol of body. Defines criterion of cooling and the effect of shape on temp of the surface and of the center of the body. Received 15 May 51.

216T52

TEMKIN, A. G.

Dissertation: "Effect of the Integral Criterion of Shape on the Processes of Heat Conductivity." Cand Tech Sci, Moscow Technological Inst of the Food Industry, 14 Apr 54. (Vechernyaya Moskva, Moscow, 2 Apr 54)

SO: SUM 243, 19 Oct 1954

TEMKIN, A. G.

AID P - 2577

Subject : USSR/Engineering

Card 1/1 Pub. 110-a - 16/16

Authors : Gukhman, A. A., Doct., Phys. Math. Sci., Prof.
Shumayev, A. I. and A. I. Veynik, Docs. Tech. Sci., Profs.
Temkin, A. G., Kand. Tech. Sci.
Blokh, A. G., Kand. Tech. Sci.

Title : A. F. Chudovskiy Teplo obmen v dispersnykh sredakh (Heat Exchange in Dispersion media) Gosenergoizdat, 1954. (Book Review)

Periodical : Teploenergetika, 8, 60-64, Ag 1955

Abstract : The book is an analysis of large-grain dispersion material. The reviewers consider the book as a timely contribution to Soviet science, although it is not devoid of some small errors.

Institution : None

Submitted : No date

Temkin, A. G. Influence of the integral criterion of form on the process of heat conduction. Z. Tekh. Fiz. 25, 497–511 (1955). (Russian) 1 - F/V

A certain criterion of form of bodies is defined as $E_v = SV^{-1}$, where S is the area of the surface and V is the volume of a given bounded body. For a cylindrical body with one infinite dimension, a similar criterion is defined as $E_v = pF^{-1}$, where p is the perimeter while F is the area of the cross-section perpendicular to the axis of the body. The rate of cooling of certain bodies is expressed as a function of these criteria. The object of the work is to give a precise meaning to a general law of cooling which states that the rate of cooling of a given body increases with an increase of the ratio of the area of its surface to the volume of the body.

H. P. Thielman (Ames, Iowa).

Temkin, A. G. A theorem on the maximum of a temperature gradient. Z. Tekh. Fiz. 25, 534–540 (1955). (Russian)

This paper is a further development of the idea presented by the author in the paper reviewed above. It is shown that if the surface of a body is increased without a change in the volume of the body, then there takes place an increase of the rate of heat flow [illegible] simultaneously with a decrease [illegible] through the surface of the body.

H. P. Thielman (Ames, Iowa).

Subject : USSR/Heat Engineering AID P - 4361

Card 1/1 Pub. 110-a - 6/19

Authors : Temkin, A. G., Kand. Tech. Sci. and V. N. Fedorov, Eng. Kuybyshev Institute of Industry

Title : On computing heat transfer in furnaces

Periodical : Teploenergetika, 4, 21-22, Ap 1956

Abstract : The computation of a radiant energy absorbing wall in the boiler is explained. A mathematical analysis for the computation of large waterwall boilers is given. Two Russian references, 1950 and 1954.

Institution : None

Submitted : No date

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 11, p 111 (USSR) SOV/124-58-11-12703

AUTHOR: Tomkin, A. G.

TITLE: Investigation of the Hydrodynamics of the Flow of Liquids in Conduits of Complex Configuration (Issledovaniye gidrodinamiki techeniya zhidkostey v kanalakh slozhnoy konfiguratsii)

PERIODICAL: Tr. Mosk. tekhnol. in-t pishch. prom-sti, 1957, Nr 8, pp 156-169

ABSTRACT: A solution of the problem of the distribution of velocities and tangential stresses over the cross section of triangular, square, rectangular, and elliptical conduits. The paper may be useful to specialists in chemical technology and heat engineering.

V. S. Muromov

Card 1/1

TEMKIN, A.G.

First interuniversity scientific technical conference on regular thermal conditions. Inzh.-fiz.zhur. 1 no.8:120-122 Ag '58.
(MIRA 11:8)

(Heat)

TEMKIN, A.G.

Generalization of A.M. Efros' theorem. Inzh.-fiz.zhur. no.4:90-92 Ap '58. (MIRA 11:7)

1.Industrial'nyy institut, g.Kuybyshev.
(Transformations (Mathematics))

TEMKIN, A.G.

Friction characteristics of channels of complex form during turbulent flow. Inzh.-fiz.zhur. no.5:23-29 My '58. (MIRA 12:1)

1. Industrial'nyy institut, g. Kiybyshev.
(Fluid dynamics) (Heat--Transmission)

24,5100
24 (8)

68775

S/170/59/002/12/002/021
B014/B014

AUTHOR: Temkin, A. G.

TITLE: The Inertia of Temperature Fields

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1959, Vol 2, Nr 12, pp 11 - 19 (USSR)

ABSTRACT: In the first part of the present paper the author gives an equation for the temperature field of a finite k-dimensional body and discusses the boundary conditions. Equation (1.7) is obtained for the Laplace representation of temperature. Next, he describes the representation of the temperature field by equation (2.1). In this connection he discusses the expansion of the radial function (2.2) in a series. Furthermore, the expansion of the temperature field in a generalized Maclaurin series is discussed, and equation (3.7) is obtained. For this representation, the author discusses the general formula for the integrals of the radial function, the representation of the temperature field by the radial function (5.1), and its expansion in a sum of two components (5.4). In conclusion, the representation of the temperature field for an arbitrary initial distribution is discussed, and formula (6.8) is written down for this temperature field. There are 7 Soviet references.

Card 1/2

The Inertia of Temperature Fields

68775
S/170/59/002/12/002/021
B014/B014

ASSOCIATION: Institut rybnoy promyshlennosti, g. Kaliningrad (Institute of the Fish Industry, City of Kaliningrad)

Card 2/2

TEMKIN, A.G.

Inertia of temperature fields. Inzh.-fiz.zhur. no.1:68-75 Ja '60. (MIRA 13:4)

1. Institut rybnoy promyshlennosti, g.Kaliningrad.
(Heat--Transmission)

KACHKOVA, M.V.; TEMKIN, A.G.; FEDOROV, V.N.

Storage of moist millet in an inert gas atmosphere. Izv. vys. ucheb. zav.;pishch. tekh. no.3:14-17 '60. (MIRA 14:8)

1. Kuybyshevskiy elevator im. M. Gor'kogo i Kuybyshevskiy industrial'nyy institut im. V.V. Kuybysheva.
(Millet—Storage)

TEMKIN, A.G., kand.tekhn.nauk dots.

Temperature field of a plate subjected to variable thermal influence. Izv.vys.ucheb.zav.; energ. 3 no.3:119-127 Mr '60. (MIRA 13:3)

1. Kaliningradskiy tekhnicheskiy institut rybnoy promyshlennosti i khozyaystva. Predstavlena kafedroy sudovykh silovykh ustanovok.

(Heat engineering)
(Heat transmission)

TEMKIN, A.G.

Temperature field of mobile sources of heat. Dokl.AN BSSR 4 no.2:55-57 F '60. (MIRA 13:6)

1. Predstavleno akademikom AN BSSR A.V. Lykovym.
(Heat--Radiation and absorption)

TEMKIN, A. G.

"Temperature Field Components of Bodies Containing Heat Sources."

Report submitted for the Conference on Heat and Mass Transfer, Minsk, BSSR, June 1961.

TEMKIN, A.G., kand.tekhn.nauk, dotsent

Determination of varying external thermal actions by thermal conductivity methods. Izv.vys.ucheb.zav.; energ. 4 no.5:69-71 My '61. (MIRA 14:6)

1. Kaliningradskiy tekhnicheskiy institut rybnoy promyshlennosti i khozyaystva. Predstavlena kafedroy sudovykh silovykh ustanovok.
(Heat—Transmission)

TEMKIN, A.G., kand.tekhn.nauk, dotsent

Mean isothermic conditions of a nonstationary field. Izv. vys. ucheb. zav.; energ. 4 no.8:83-91 Ag '61. (MIRA 14:8)

1. Kaliningradskiy tekhnicheskiy institut rybnoy promyshlennosti i khozyaystva. Predstavlena kafedroy sudovykh silovykh ustanovok.

(Heat—Transmission)

27246
S/170/61/004/009/005/013
B104/B125

24,5200

AUTHOR: Temkin, A. G.

TITLE: Inverse problems of heat conduction of a symmetric field

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 4, no. 9, 1961, 45-55

TEXT: The temperature field in a k-dimensional body, its surface temperature, and the temperature gradient on its surface can be calculated by measuring the temperature at a point inside the body, provided the temperature field is symmetric. The temperature field of a body having k finite dimensions may be described by the heat-conduction equation $\partial t/\partial H = \partial^2 t/\partial N^2 + (k - 1)\partial t/N\partial N$. In the problem raised here, the heat exchange between the body and the ambient, the ambient temperature, and the heat current passing through the surface of the body are unknown. The boundary conditions of this problem, which usually refer to the body's surface, are replaced by a condition at the point where the temperature is measured. From the Laplace representation of the above heat-conduction equation and from the corresponding boundary conditions, it is concluded that the solutions to this heat-conduction equation refer only to points

Card 1/3

Inverse problems of heat conduction ...

$N < N_1$, where N_1 is the point of temperature measurements. The author looks for a method which allows the field to be found also in the range $N > N_1$. For this purpose, it is assumed that the solution can be represented in the form: $t(N;H;k) = t_a(N;H;k) + t_r(N;H;k)$. Here, t_a is the active field, and t_r is the reactive field. Each of the two fields satisfies the heat-conduction equation and the condition of symmetry. Next, series representations of t_a and t_r are developed, which fulfill these conditions. The heat conduction is calculated from the equation

$$t(N_2;\tau;k) = t(N_1;\tau) + \frac{1}{2k}[N_2^2 - N_1^2]\frac{R^2}{a}\frac{dt(N_1;\tau)}{d\tau} + \\ + \left[\frac{N_2^4}{8k(k+2)} - \frac{N_2^2N_1^2}{4k^2} + \frac{(k+4)N_1^4}{8k^2(k+2)}\right]\frac{R^4}{a^2}\frac{d^2t(N_1;\tau)}{d\tau^2} + \\ + \left[\frac{N_2^6}{48k(k+2)(k+4)} - \frac{N_2^4N_1^2}{16k^2(k+2)} + \frac{(k+4)N_2^2N_1^2}{16k^3(k+2)} - \right. \\ \left. - \frac{(k^2+12k+48)N_1^6}{48k^3(k+2)(k+4)}\right]\frac{R^6}{a^3}\frac{d^3t(N_1;\tau)}{d\tau^3} + \ldots \qquad (3.1)$$

Card 2/3

Inverse problems of heat conduction ...

by measuring the temperature at points N_1 and N_2. The determination of the heat-exchange coefficient, which depends on the conditions of heat exchange, by temperature measurements inside and outside a body is discussed for two cases: 1) The ambient temperature and its variation in time are known, while the temperature variation in time at the point N of the body is unknown. 2) The temperature at point N_1 of the body and its variation in time are known, while the variation of the ambient temperature in time is unknown. In these problems, the varying heat-exchange coefficient is determined from the varying value of the Biot number. A. A. Gukhman is mentioned. Sh. N. Plyat is thanked for discussions. There are 9 Soviet references.

ASSOCIATION: Tekhnicheskiy institut rybnoy promyshlennosti i khozyaystva, g. Kaliningrad (Technical Institute of the Fishing Industry and Economy, Kaliningrad)

SUBMITTED: March 25, 1961

Card 3/3

27554
S/170/61/004/010/008/019
B109/B138

4

26.5100

AUTHOR: Temkin, A. G.

TITLE: Inverse problems of heat conduction of an asymmetrical field

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TEXT: The temperature field of a k-dimensional solid with a cavity is reconstructed according to temperature measurements at two points. The problem is solved for the case of a plate, a hollow cylinder, and a hollow sphere. It is assumed that the temperature at the 2 points N_1 and N_2 is known as $t(N_1,H) = t_1(H)$ and $t(N_2,H) = t_2(H)$. Then, the heat-conduction equation

$$\partial t/\partial H = \partial^2 t/\partial N^2 + \frac{k-1}{N}\,\partial t/\partial N \ldots . \qquad (1.3)$$

will describe the total temperature field of a solid bounded by an inner surface and by an outer surface (N_i and N_e, respectively) ($N_i < N < N_e$). According to A. G. Temkin ("Izv. vyzov, Energetika", No. 5, 1961), the formulation

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$$t(N, H, k) = \sum_{n=0}^{\infty} t_1^{(n)}(H) P_n(N, N_1, k) + t_2^{(n)}(H) P_n(N, N_2, k). \qquad (1.5)$$

is valid for the field of influence with $P_n(N_2,N_1,k)=P_n(N_1,N_2,k)=0, n=0,1,2,\ldots$; $P_0(N_1,N_1,k) = P_0(N_2,N_2,k) = 1$; $P_n(N_1,N_1,k) = P_n(N_2,N_2,k) = 0$, $n = 1,2,3,\ldots$. Substituting this formulation in (1.3) and setting $\nu = N/N_1$ and $\Delta = N_2/N_1$ will yield the solution

$$t(\nu,H,k) = \sum_{n=0}^{\infty} t_1^{(n)}(H)P_n(\nu,1,k) + t_2^{(n)}(H)P_n(\nu,\Delta,k), \text{ where}$$

$$P_0(\nu, 1, k) = 1 - \frac{\int_1^{\nu} \nu^{k-1} d\nu}{\int_1^{\Delta} \nu^{k-1} d\nu}, \qquad (1.21)$$

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$$P_0(\nu, \Delta, k) = \frac{\int_1^{\nu} \nu^{k-1} d\nu}{\int_1^{\Delta} \nu^{k-1} d\nu}. \qquad (1.22)$$

$$P_n(\nu, 1, k) = \int_1^{\nu} \eta^{1-k} d\eta \int_1^{\eta} \xi^{k-1} P_{n-1}(\xi, \mu, k) d\xi -$$

$$- \frac{\int_1^{\nu} \eta^{1-k} d\eta}{\int_1^{\Delta} \eta^{1-k} d\eta} \int_1^{\Delta} \eta^{1-k} d\eta \int_1^{\eta} \xi^{k-1} P_{n-1}(\xi, \mu, k) d\xi, \qquad (1.24), \text{ and}$$

$$P_n(\nu, \Delta, k) = \int_{\Delta}^{\nu} \eta^{1-k} d\eta \int_1^{\eta} \xi^{k-1} P_{n-1}(\xi, \mu, k) d\xi -$$

$$- \frac{\int_1^{\nu} \eta^{1-k} d\eta}{\int_1^{\Delta} \eta^{1-k} d\eta} \int_1^{\Delta} \eta^{1-k} d\eta \int_1^{\eta} \xi^{k-1} P_{n-1}(\xi, \mu, k) d\xi. \qquad (1.25)$$

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Examples: 1) temperature field of a plate. Here, it is convenient to choose $\xi = \frac{N - N_1}{N_2 - N_1}$, $\xi = 0$ in N_1, $\xi = 1$ in N_2. Solution:

$$t_a(\xi, H, 1) = \sum_{\mu=0}^{1} \sum_{n=0}^{\infty} t^{(n)}(\mu, H) P_n(\xi, \mu, 1), \text{ where}$$

$$P_0(\xi, 0, 1) = -\xi + 1, \tag{2.10}$$

$$P_1(\xi, 0, 1) = -\frac{\xi^3}{6} + \frac{\xi^2}{2} - \frac{\xi}{3}, \tag{2.11}$$

$$P_2(\xi, 0, 1) = -\frac{\xi^5}{120} - \frac{\xi^4}{24} - \frac{\xi^3}{18} + \frac{\xi}{45}; \tag{2.12}$$

and

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$$P_0(\xi, 1, 1) = \xi, \tag{2.13}$$

$$P_1(\xi, 1, 1) = \frac{\xi^3}{6} - \frac{\xi}{6}, \tag{2.14}$$

$$P_2(\xi, 1, 1) = \frac{\xi^5}{120} - \frac{\xi^3}{36} + \frac{7}{310}\xi. \tag{2.15}$$

2) Hollow cylinder:

$$t(\nu, H, 2) = \sum_{\mu=1, \Delta} \sum_{n=0}^{\infty} t^{(n)}(\mu, H) P_n(\nu, \mu, 2), \tag{3.1}$$

$P_0(\upsilon,1,2) = 1 - \frac{\ln\upsilon}{\ln\Delta}$, $P_0(\upsilon,\Delta,2) = \frac{\ln\upsilon}{\ln\Delta}$,

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$$P_n(\nu, \mu, 2) = \int_1^{\nu} \frac{d\eta}{\eta} \int_1^{\eta} \xi P_{n-1}(\xi, \mu, 2)\, d\xi -$$

$$- \frac{\ln \nu}{\ln \Delta} \int_1^{\Delta} \frac{d\eta}{\eta} \int_1^{\eta} \xi P_{n-1}(\xi, \mu, 2)\, d\xi. \qquad (3.7)$$

In order to calculate the heat flow through the inner or outer surface, (3.1) has to be partially differentiated at υ_i or υ_e with respect to .

3) Hollow sphere:

$$t(\nu, H, 3) = \sum_{\mu=1,\,\Delta} \sum_{n=0}^{\infty} t^{(n)}(\mu, H)\, P_n(\nu, \mu, 3). \qquad (4.1)$$

$$P_0(\nu, 1, 3) = \frac{1}{\Delta - 1}\left[\frac{\Delta}{\nu} - 1\right], \qquad (4.9)$$

$$P_0(\nu, \Delta, 3) = \frac{\Delta}{\Delta - 1}\left[1 - \frac{1}{\nu}\right]. \qquad (4.10)$$

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$$P_{n+1}(\nu, \mu, 3) = \int_1^{\nu} \eta^{-3} d\eta \int_1^{\eta} P_n(\xi, \mu, 3)\, \xi^3 d\xi - \frac{\nu - 1}{\Delta - 1} \frac{\Delta}{\nu} \int_1^{\Delta} \eta^{-3} d\eta \int_1^{\eta} P_n(\xi, \mu, 3)\, \xi^3 d\xi. \quad (4.7)$$

The heat flow is calculated by differentiating (4.1) with respect to ν. The heat-transfer coefficient is determined as follows: If the temperatures at three points (1, Δ, and ν in between) are known, then it is possible to calculate the effect of temperature on the coefficients of thermal conductivity and thermal diffusivity. When a denotes the thermal diffusivity, x is the characteristic length of the solid $x = R_2 - R_1$, and the sign of the differentiation denotes differentiation with respect to time τ, then, due to

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$$t(\nu, \tau, k) = [t_1(\tau) P_0(\nu, 1, k) + t_2(\tau) P_0(\nu, \Delta, k)] + \\ + \frac{x^2}{a} [t_1'(\tau) P_1(\nu, 1, k) + t_2'(\tau) P_1(\nu, \Delta, k)] + \\ + \frac{x^4}{a^2} \left[t_1''(\tau) P_2(\nu, 1, k) + t_2''(\tau) P_2(\nu, \Delta, k) \right] + \ldots, \qquad (5.1)$$

the following expression will be valid for small time intervals:

$$a_n = \frac{x^2 [t_1'(\tau) P_1(\nu, 1, k) + t_2'(\tau) P_1(\nu, \Delta, k)]}{t(\nu, \tau, k) - [t_1(\tau) P_0(\nu, 1, k) + t_2(\tau) P_0(\nu, \Delta, k)]}; \qquad (5.2)$$

For a temperature close to the value measured at the intermediate point, a can be calculated from

$$a_n = a_n \left[0{,}5 + \sqrt{0{,}25 + \frac{[t_1''(\tau) P_2(\nu, 1, k) + t_2''(\tau) P_2(\nu, \Delta, k)] x^2}{[t_1'(\tau) P_1(\nu, 1, k) + t_2'(\tau) P_1(\nu, \Delta, k)] a_n}} \right]. \qquad (5.3)$$

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